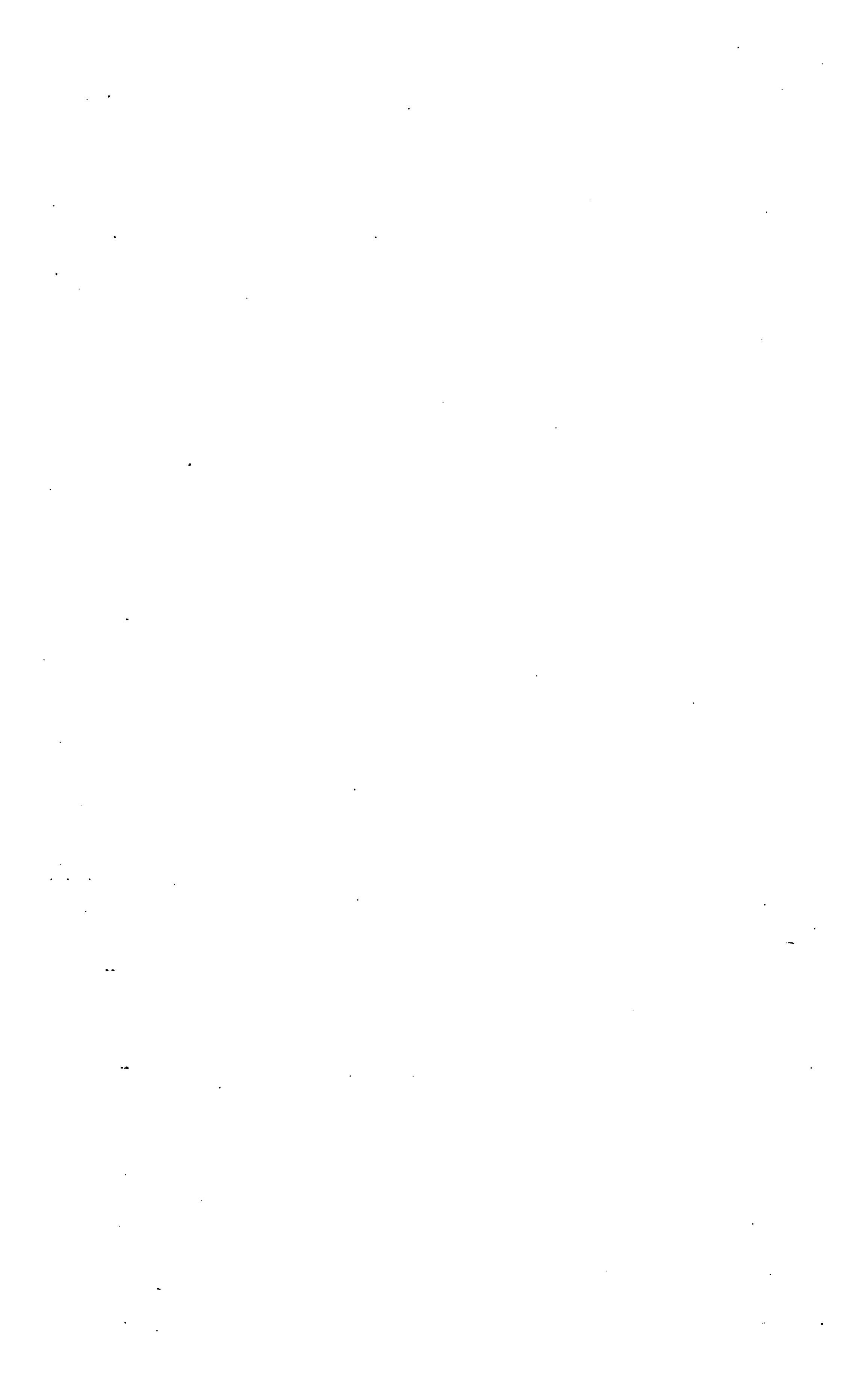

LELAND·STANFORD·JVNIOR·VNIVERSITY



HÜLFSTAFELN

ZUR

LEICHTEN UND GENAUEN AUFLÖSUNG

DES

KEPLER'SCHEN PROBLEMS

VON

J. J. ÅSTRAND

DIRECTOR DER STERNWARTE ZU BERGEN,
MITGLIED DER KÖNIGL. WETENSKAPS- OCH WITTERHETS-SAMHÄLLET
IN GOTHENBURG, UND DER ASTRONOMISCHEN GESELLSCHAFT.

MIT EINER EINLEITUNG

VON

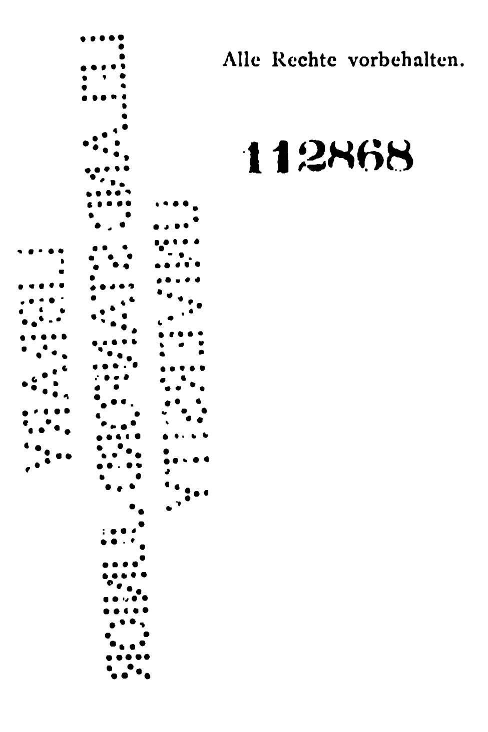
H. BRUNS

PROFESSOR AN DER UNIVERSITÄT ZU LEIPZIG.

LEIPZIG

VERLAG VON WILHELM ENGELMANN

1890.



Druck von Breitkopf & Härtel in Leipzig.

VORWORT.

Indem ich die nachstehenden Tafeln der Oeffentlichkeit übergebe, hoffe ich den Astronomen eine nicht unwesentliche Erleichterung bei der Berechnung elliptischer Bahnen, sei es von Planeten und Kometen, sei es von Doppelsternen, zu bieten. Da ich bezüglich der Einzelheiten auf die nachstehende Einleitung verweisen darf, so bemerke ich nur, dass die Haupttafel in passenden Intervallen durch successive Approximation gerechnet und mit dritten Differenzen interpolirt wurde, was für den Zweck derselben als völlig ausreichend erscheint. Die auf Veranlassung von Herrn Prof. Bruns angefügte Hülfstafel für log A wurde mittelst der Reihenentwickelung nach Potenzen von sin E in passenden Intervallen zehnstellig gerechnet und dann scharf interpolirt, so dass nur in sehr wenigen Fällen eine noch schärfere Rechnung die letzte Decimale um eine Einheit ändern könnte.

Da ich bei der Berechnung und bei der Revision des Druckes auf mich allein angewiesen gewesen bin, so muss ich mit der Möglichkeit rechnen, dass trotz aller aufgewandten Sorgfalt sich der eine oder andere Fehler eingeschlichen hat, zumal da der Satz nicht stereotypirt worden ist. Ich werde daher jede Berichtigung mit Dank entgegennehmen.

Endlich habe ich noch an dieser Stelle meinen wärmsten Dank auszusprechen für die liebenswürdige Bereitwilligkeit, mit welcher Herr Prof. Bruns die Abfassung der Einleitung übernommen hat.

Bergen, März 1890.

J. J. Åstrand.



EINLEITUNG.

Die verschiedenen zur numerischen Auflösung der Kepler'schen Gleichung

$$M = E - e \sin E$$

aufgestellten Methoden sind, mit einer Ausnahme*), wesentlich indirecter Art und setzen, wenn man von der einfachen Regula falsi und ihren mannigfachen Varianten absieht, zur bequemen Anwendung die Benutzung von Hülfstafeln voraus. Eine vergleichende Nebeneinanderstellung dieser verschiedenen Methoden lehrt nun, dass, wenn man einmal Hülfstafeln von einem gewissen Umfange entwerfen will, die Regula falsi in ihrer kunstlosesten Form die einfachste Rechnung gewährt, sobald nur eine Voraussetzung erfüllt ist, nämlich sobald jene Tafeln den Werth der Unbekannten E direct mit solcher Annäherung geben, dass im Allgemeinen bereits die einmalige Durchrechnung der Regula falsi das correcte Resultat liefert. Diesen Zweck sollen nun die vorliegenden von Herrn Åstrand berechneten Tafeln erfüllen.

Die Einrichtung der ersten Tafel oder der Haupttafel ist unmittelbar verständlich. Für jedes runde Hundertstel der Excentricität e ist E mit dem Argument M tabulirt und zwar in Halbgradintervallen für $M = 0\overset{\circ}{.}0$ bis $20\overset{\circ}{.}0$, darüber hinaus bis $M = 180^\circ$ in Eingradintervallen. Dieser Umfang des Arguments ist offenbar ausreichend, da die Kepler'sche Gleichung ungeändert bleibt, wenn man für E und M ihre Ergänzungen zu 360° oder, was auf dasselbe hinauskommt, ihre entgegengesetzten Werthe setzt. Angehängt ist dann eine weiterhin zu besprechende besondere Hülfstafel für den Fall, wo der Ausdruck $1 - e \cos E$ sehr klein wird.

Die Art und Weise, wie man aus der Haupttafel für ein gegebenes e und M, sei es durch Bildung nur zweier Proportionaltheile, sei es schärfer durch dreimalige Interpolation, drei Decimalen des Grades für das gesuchte E ermittelt, bedarf keiner weiteren Auseinandersetzung; dagegen ist es für die bequeme Anwendung der Tafel von Belang, sich über die hierbei etwa zulässigen Abkürzungen klar zu werden. Es sei E_0 der aus der Tafel entnommene Näherungswerth, M_0 der aus

$$M_0 = E_0 - e \sin E_0$$

scharf berechnete zu E_0 gehörige Werth von M, dann ist

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*) Vgl. die interessante Abhandlung von Prof. E. Weiss »Entwicklungen zum Lagrange'schen Reversionstheorem etc.« in Abh. der Wiener Akademie 1885.

$$M - M_0 = (E - E_0)(1 - e\cos E_0) + D,$$

$$D = \frac{1}{2} e \sin E_0 (E - E_0)^2 + \frac{1}{6} e \cos E_0 (E - E_0)^3 + \dots$$

Bei der Anwendung der Regula falsi wird nun D vernachlässigt, d h. statt

$$E - E_0 = (M - M_0 - D) : (1 - e\cos E_0)$$

einfach

$$E - E_0 = (M - M_0) : (1 - e\cos E_0)$$

gesetzt. Es fragt sich also, für welche Beträge von $E - E_0$ der Werth von D merklich wird. Das nachstehende Täfelchen giebt die unter Berücksichtigung der zweiten und dritten Potenzen von $E - E_0$ berechneten Werthe von D für $E - E_0 = 0^\circ.01$, und zwar in $0''.0001$ ausgedrückt. Das verticale Argument ist E, das horizontale e.

$e =$	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
$E =$ 0°	0	0	0	0	0	0	0	0	0	0
15	1	2	2	3	4	5	6	7	7	8
30	2	3	5	6	8	9	11	13	14	16
45	2	4	7	9	11	13	16	18	20	22
60	3	5	8	11	14	16	19	22	24	27
75	3	6	9	12	15	18	21	24	27	30
90	3	6	9	13	16	19	22	25	28	31
105	3	6	9	12	15	18	21	24	27	30
120	3	5	8	14	14	16	19	22	24	27
135	2	4	7	9	11	13	16	18	20	22
150	2	3	5	6	8	9	11	13	14	16
165	1	2	2	3	4	5	6	6	7	8
180	0	0	0	0	0	0	0	0	0	0

Wie die vorstehenden Zahlen lehren, kann D vernachlässigt werden, so lange man einerseits M nicht schärfer als auf $0''.01$ ansetzt, und so lange andererseits der Fehler des angenommenen E_0 den Betrag von $0^\circ.01$ nicht merklich überschreitet. Nun ist eine grössere Schärfe als $0''.01$ bei der Berechnung von M nur dann erforderlich, wenn $1 - e\cos E$ sehr klein ist. Dieser Grenzfall erfordert aber bekanntlich bei allen Methoden zur Auflösung der Kepler'schen Gleichung eine besondere Behandlung und kann deshalb für den Augenblick bei Seite gelassen werden. Hält man dies fest, so lehrt eine Durchsicht der in der Haupttafel angesetzten Differenzen, dass bei der Interpolation nach M die dritten Differenzen nicht in Betracht kommen, dass ferner die zweiten Differenzen entweder vernachlässigt oder, wo es erforderlich erscheint, mit Leichtigkeit berücksichtigt werden können. Die ersten Differenzen liefern offenbar einen angenäherten Werth für den Differentialquotienten

$$\frac{\partial E}{\partial M} = \frac{1}{1 - e\cos E},$$

d. h. für den Factor, mit dem $M - M_0$ zu multipliciren ist, um $E - E_0$ zu erhalten. Bei den Eingradintervallen ist nämlich der Differentialquotient nahe gleich der Differenz selber, bei den Halbgradintervallen gleich dem Doppelten derselben. Der jedesmal vorliegende Werth von $M - M_0$ gestattet sofort zu überschlagen, welcher Fehler in dem auf diese Weise (eventuell unter Interpolation nach e) berechneten Differential-

quotienten zulässig ist, damit der Fehler in E unter einer bestimmten Grenze bleibt. Erscheint diese Berechnung des Differentialquotienten nicht als hinreichend scharf, was nur bei stärker fehlerhaftem E_0 vorkommen wird, so kann man den Divisor $1 - e \cos E$ direct bilden, falls man es nicht vorzieht, zugleich als eine Controle die Auflösung noch einmal durchzurechnen.

Für die Interpolation nach e ist der Gang der Differenzen nicht unmittelbar aus der Tafel zu übersehen. Die nachfolgende Zusammenstellung giebt einen Ueberblick über die Beträge der Differenzen zweiter Ordnung, ausgedrückt in 0.001°.

$M =$	5°	10°	30°	50°	70°
$e = 0.10$	1	4	7	5	2
0.20	1	4	7	5	1
0.30	2	6	7	4	2
0.40	4	10	9	1	3
0.50	7	13	7	1	5
0.60	13	19	3	2	4
0.70	25	24	1	4	3
0.80	44	17	3	4	4
0.90	30	1	5	5	3
0 91	25	1	6	5	4
0.92	19	1	6	4	4
0.93	15	3	5	4	3
0.94	9	4	6	6	4
0.95	4	6	5	3	3
0.96	0	5	7	5	4
0.97	3	11	6	4	2
0.98	8	7	6	5	5
0.99	10	9	5	4	3

Oberhalb der eingeschalteten Querstriche sind die Werthe positiv, unterhalb negativ; ferner sind für $M > 70^\circ$ die Werthe durchgehends von derselben Grössenordnung wie für 70°.

Das Vorstehende zeigt, dass es innerhalb des weitaus grössten Theiles der Tafel ausreichend ist, das gesuchte E_0 durch Berechnung nur zweier Proportionaltheile ohne Rücksicht auf zweite Differenzen zu bilden und für den Differentialquotienten direct die nach M genommene erste Differenz zu benutzen. In den ungünstigeren Fällen, welche sofort an dem Gange der Tafeldifferenzen erkannt werden, wird man für die einschliessenden Werthe von e nach M mit zweiten Differenzen und dann nach e nur mit ersten Differenzen interpoliren, sodann aber den Differentialquotienten je nach dem Betrage von $M - M_0$ durch Interpolation nach e oder durch directe Rechnung ermitteln. Die folgenden zwei Beispiele mögen dies näher erläutern.

von Oppolzer behandelt in seiner Hülfstafel*) den Fall

$$M = 34^\circ 19' 36''.14 = 123576''.14 = 34^\circ 33,$$
$$\log e = 9.7442503, \quad \log e'' = 5.0586754, \quad e = 0.5549 .$$

*) Ueber die Auflösung des Kepler'schen Problems, S. 4. Wien. Akad. Abh. 1885.

Hiermit stellt sich die Rechnung wie folgt:

$$M = 34^{\circ}, \quad e = 0.55, \quad E = 61^{\circ}.762$$

Proportionaltheile:

$$\begin{aligned}
0.33 \times 1.342 &= .443 \\
0.49 \times 0.684 &= .336 \\
E_0 &= 62.541 \\
&= 62^{\circ}32'\,27''.6 \\
\log\sin E_0 &= 9.6480906 \\
\log e''\sin E_0 &= 5.0067660 \\
e''\sin E_0 &= 101570''.12 \\
&= 28^{\circ}12'\,50''.12 \\
M_0 &= 34\;\;19\;\;37.48 \\
M - M_0 &= -1.34 \\
E - E_0 = 1.342(M - M_0) &= -1.80 \\
E &= 62\;\;32\;\;25.80
\end{aligned}$$

übereinstimmend mit der dritten und letzten Annäherung bei von Oppolzer.

Als zweites Beispiel diene der von Karlinski (Astr. Nachr. No. 1356 S. 191) behandelte Fall:

$$M = 5^{\circ}40'\,12''.00 = 5^{\circ}.670$$

$$\log e = 9.998\,6322, \quad \log e'' = 5.313\,0573, \quad e = 0.996\,86.$$

Dieser Fall gehört zu den ungünstigeren; es wird

$$\begin{aligned}
e &= 0.99 & M &= 5^{\circ}.670 & E &= 47^{\circ}.471 \\
e &= 1.00 & M &= 5.670 & E &= 48.742 \\
e &= 0.99686 & M &= 5.670 & E_0 &= 48.343
\end{aligned}$$

$$\begin{aligned}
&= 48^{\circ}20'\,34''.8 \\
\log\sin E_0 &= 9.8734004 \\
\log e''\sin E_0 &= 5.1864577 \\
e''\sin E_0 &= 153623''.51 \\
&= 42^{\circ}40'\,23''51 \\
M_0 &= 5\;\;40\;\;11.29 \\
M - M_0 &= +0.71
\end{aligned}$$

Interpolirt man zwischen den beiden angenäherten Werthen des Differentialquotienten, nämlich 2.997 und 2.910, so erhält man 2.94, also

$$E - E_0 = +2''.09, \quad E = 48^{\circ}20'\,36''.89.$$

Karlinski findet durch vier Annäherungen nach der Methode von Gauss

$$E = 48^{\circ}20'\,36.86.$$

Die Uebereinstimmung ist mit Rücksicht auf den Einfluss der unvermeidlichen Abrundungsfehler als eine vollständige anzusehen. Hätte man übrigens ganz roh ohne Rücksicht auf zweite Differenzen interpolirt, so würde man

$$E_0 = 48^{\circ}.343$$

erhalten haben, d. h. zufällig genau denselben Werth wie vorhin.

Wenn $1 - e\cos E$ sehr klein ist, so wird die Berechnung von M aus E und von E aus M wegen des dann eintretenden Verlustes an geltenden Ziffern unsicher, und man ist genöthigt, eventuell unter Benutzung von besonderen Hülfstafeln, eine abgeänderte Gestalt der Kepler'schen Gleichung zu Grunde zu legen. Verzichtet man darauf, auch den bisher

nur ganz ausnahmsweise vorgekommenen Fall hyperbolischer Bahnen mit zu berücksichtigen, so lässt sich die Aufgabe in höchst einfacher Weise erledigen und zwar mittelst einer Tafel, die auch bei manchen anderen Aufgaben unmittelbar benutzt werden kann. Es werde gesetzt

$$E - \sin E = A \,.\, \sin E^3\,,$$

dann ist A durch die Reihe

$$\frac{1}{2}\cdot\frac{1}{3} + \frac{1.3}{2.4}\,\frac{\sin E^2}{5} + \frac{1.3.5}{2.4.6}\,\frac{\sin E^4}{7} + \ldots$$

gegeben. Die hier mitgetheilte Hülfstafel giebt nun mit dem Argument $\log \sin E$ als Function den $\log A$ in einer für den vorliegenden Zweck mehr als genügenden Ausdehnung. Schreibt man jetzt

$$\begin{aligned} M &= E - \sin E + (1 - e)\sin E \\ &= A \,.\, \sin E^3 + (1 - e)\sin E\,, \end{aligned}$$

so erkennt man, dass die Berechnung von M aus E und ebenso von E aus M stets ohne jeden Genauigkeitsverlust möglich ist. Um E zu ermitteln, wird man zweckmässig statt mit dem Winkel M mit dem Logarithmus des Bogens M rechnen und die Regula falsi in der Form

$$\log\frac{\sin E}{\sin E_0} = \frac{\partial \log \sin E_0}{\partial \log M_0}\cdot \log\frac{M}{M_0} = G(\log M - \log M_0)$$

benutzen, wo für G nach einer leichten Umformung der Ausdruck

$$G = \cos E\left(1 + A\,\frac{\sin E^2}{1 - e}\right) : \left(1 + \frac{e}{2\cos \frac{1}{2}E^2}\,\frac{\sin E^2}{1 - e}\right)$$

erhalten wird. Statt G hiernach direct zu rechnen, wird es übrigens im Allgemeinen bequemer sein, zunächst mit zwei passenden Hypothesen für $\log \sin E_0$ den $\log M_0$ und daraus einen Werth für G zu ermitteln, der bei den folgenden Annäherungen unverändert beibehalten wird. Wenn M oberhalb $0^\circ\!.5$ liegt, so erhält man, wie die Zahlen der Haupttafel erkennen lassen, durch Interpolation (mit dritten Differenzen nach M, geradlinig nach e) einen für den Beginn der Rechnung brauchbaren Werth von E. Liegt dagegen M unter $0^\circ\!.5$, so würde die Interpolation erheblich fehlerhafte Werthe liefern, da die Voraussetzungen für die Anwendbarkeit derselben auch nicht entfernt erfüllt sind. In diesem Falle lässt sich das Probiren beim Aufsuchen eines ersten brauchbaren Werthes von E erheblich durch folgenden Kunstgriff abkürzen. Wir schreiben die Kepler'sche Gleichung in der Form

$$\sin E^3 + 3\,.\,\frac{2(1 - e)}{6A}\sin E = 2\,.\,\frac{3M}{6A}$$

und setzen

$$u^3 = \sqrt{\left(\frac{3M}{6A}\right)^2 + \left(\frac{2(1 - e)}{6A}\right)^3} + \frac{3M}{6A}\,,$$

$$v^3 = \sqrt{\left(\frac{3M}{6A}\right)^2 + \left(\frac{2(1 - e)}{6A}\right)^3} - \frac{3M}{6A}\,,$$

dann ist

$$\sin E = u - v\,.$$

Ist für $\log \sin E$ irgend ein, wenn auch nur ganz roher, Annäherungswerth bekannt, so liefert die Tafel für $\log A$ einen in den ersten Decimalen richtigen Werth, mit dem man u und v rechnet und damit einen

erheblich besseren Werth für sin E erhält. Ist man über den Werth von E völlig im Ungewissen, so wird man mit der Annahme $6A = 1$ beginnen.

Als Beispiel wollen wir $E = 5^0$ und wie in dem vorigen Falle

$$\log e = 9.9986322 \qquad e = 0.99685545$$
$$\log(1-e) = 7.4975585 \qquad 1-e = 0.00314455$$

wählen. Es wird dann

$\log \sin E$	8.940 2960
$\log \sin E^3$	6.820 8880
$\log A$	9.223 3374
$\log (E - \sin E)$	6.044 2254
$\log (1 - e) \sin E$	6.437 8545
$\log M$	6.585 2186
M	0°.02205

Umgekehrt sei für dasselbe e gegeben

$$\log M = 6.5852186 \qquad M = 0°.02205\ .$$

Die Auflösung der kubischen Gleichung unter der Annahme $6A = 1$ liefert mit vierstelliger Rechnung

$$u = 0.1341 \qquad v = 0.0469 \qquad \log \sin E = 8.9405\ .$$

Wir rechnen deshalb die beiden Hypothesen

$\log \sin E$	8.940 0000	8.941 0000
$\log \sin E^3$	6.820 0000	6.823 0000
$\log A$	9.223 3354	0.223 3423
$\log (E - \sin E)$	6.043 3354	6.046 3423
$\log (1 - e) \sin E$	6.437 5585	6.438 5585
$\log M$	6.584 7518	6.586 3296
$\log \frac{M}{M_0}$	— 4668	+ 11110

Die Interpolation liefert

$$\log \sin E = 8.940\,2959\ ,$$

d. h. die Rechnung einer weiteren Hypothese würde an dem gefundenen Werthe materiell nichts ändern.

Es versteht sich von selbst, dass man bei der Berechnung der wahren Anomalie v und des Radiusvectors r die üblichen Formeln angemessen umzugestalten hat. Man wird also z. B. rechnen

$$\operatorname{tg} \frac{1}{2} v = \frac{1}{2} \sqrt{\frac{1+e}{1-e}} \sin E \sec \frac{1}{2} E^2\ ,$$

$$\sqrt{r} \sin \frac{1}{2} v = \frac{1}{2} \sqrt{a(1+e)} \sin E \sec \frac{1}{2} E\ ,$$

$$\sqrt{r} \cos \frac{1}{2} v = \sqrt{a(1-e)} \cos \frac{1}{2} E\ ,$$

und in ähnlicher Weise wird man an anderen Stellen entsprechende Umformungen vornehmen.

Leipzig, 1890 März 29. **H. Bruns.**

Dreistellige W[illegible]

von

$E = M + e \sin E$ [illegible]

und deren 1ste D[illegible]

für die Argum[illegible]

e bis 1,00 un[illegible]

$$E = M + e \sin E.$$

$e = 0.01$											
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	0.505	30	30.289	1.009	80	80.565	1.002	130	130.435	0.994
0.5	0.505	0.505	31	31.298	1.008	81	81.567	1.001	131	131.429	0.994
1.0	1.010	0.505	32	32.306	1.009	82	82.568	1.002	132	132.423	0.993
1.5	1.515	0.505	33	33.315	1.008	83	83.570	1.001	133	133.416	0.993
2.0	2.020	0.505	34	34.323	1.008	84	84.571	1.001	134	134.409	0.993
2.5	2.525	0.505	35	35.331	1.008	85	85.572	1.000	135	135.402	0.993
3.0	3.030	0.505	36	36.339	1.009	86	86.572	1.001	136	136.395	0.993
3.5	3.535	0.505	37	37.348	1.008	87	87.573	1.000	137	137.388	0.992
4.0	4.040	0.505	38	38.356	1.008	88	88.573	1.000	138	138.380	0.993
4.5	4.545	0.505	39	39.364	1.007	89	89.573	1.000	139	139.373	0.992
5.0	5.050	0.505	40	40.371	1.008	90	90.573	1.000	140	140.365	0.992
5.5	5.555	0.505	41	41.379	1.007	91	91.573	1.000	141	141.357	0.993
6.0	6.060	0.505	42	42.386	1.008	92	92.573	0.999	142	142.350	0.992
6.5	6.565	0.505	43	43.394	1.007	93	93.572	0.999	143	143.342	9.992
7.0	7.070	0.505	44	44.401	1.007	94	94.571	0.999	144	144.334	0.992
7.5	7.575	0.505	45	45.408	1.007	95	95.570	0.999	145	145.326	0.992
8.0	8.080	0.505	46	46.415	1.007	96	96.569	0.999	146	146.318	0.991
8.5	8.585	0.505	47	47.422	1.007	97	97.568	0.999	147	147.309	0.992
9.0	9.090	0.505	48	48.429	1.006	98	98.567	0.998	148	148.301	0.992
9.5	9.595	0.505	49	49.435	1.007	99	99.565	0.998	149	149.293	0.991
10.0	10.100	0.505	50	50.442	1.006	100	100.563	0.998	150	150.284	0.991
10.5	10.605	0.505	51	51.448	1.006	101	101.561	0.998	151	151.275	0.992
11.0	11.110	0.505	52	52.454	1.006	102	102.559	0.998	152	152.267	0.991
11.5	11.615	0.505	53	53.460	1.006	103	103.557	0.997	153	153.258	0.991
12.0	12.120	0.505	54	54.466	1.006	104	104.554	0.998	154	154.249	0.991
12.5	12.625	0.505	55	55.472	1.005	105	105.552	0.997	155	155.240	0.991
13.0	13.130	0.505	56	56.477	1.006	106	106.549	0.997	156	156.231	0.991
13.5	13.635	0.505	57	57.483	1.005	107	107.546	0.997	157	157.222	0.991
14.0	14.140	0.505	58	58.488	1.006	108	108.543	0.997	158	158.213	0.991
14.5	14.645	0.505	59	59.494	1.005	109	109.540	0.996	159	159.204	0.990
15.0	15.150	0.505	60	60.499	1.005	110	110.536	0.997	160	160.194	0.991
15.5	15.655	0.505	61	61.504	1.004	111	111.533	0.996	161	161.185	0.990
16.0	16.160	0.505	62	62.508	1.005	112	112.529	0.996	162	162.175	0.991
16.5	16.665	0.505	63	63.513	1.004	113	113.525	0.996	163	163.166	0.990
17.0	17.170	0.505	64	64.517	1.004	114	114.521	0.996	164	164.156	0.991
17.5	17.675	0.505	65	65.521	1.004	115	115.517	0.996	165	165.147	0.990
18.0	18.180	0.505	66	66.525	1.004	116	116.513	0.995	166	166.137	0.991
18.5	18.685	0.504	67	67.529	1.004	117	117.508	0.996	167	167.128	0.990
19.0	19.189	0.505	68	68.533	1.004	118	118.504	0.995	168	168.118	0.991
19.5	19.694	0.504	69	69.537	1.003	119	119.499	0.995	169	169.109	0.990
20	20.198	1.009	70	70.540	1.003	120	120.494	0.995	170	170.099	0.990
21	21.207	1.010	71	71.543	1.003	121	121.489	0.994	171	171.089	0.990
22	22.217	1.009	72	72.546	1.003	122	122.483	0.995	172	172.079	0.990
23	23.226	1.009	73	73.549	1.003	123	123.478	0.994	173	173.069	0.990
24	24.235	1.009	74	74.552	1.003	124	124.472	0.995	174	174.059	0.990
25	25.244	1.010	75	75.555	1.002	125	125.467	0.994	175	175.049	0.990
26	26.254	1.009	76	76.557	1.002	126	126.461	0.994	176	176.039	0.991
27	27.263	1.009	77	77.559	1.002	127	127.455	0.993	177	177.030	0.990
28	28.272	1.008	78	78.561	1.002	128	128.448	0.994	178	178.020	0.990
29	29.280	1.009	79	79.563	1.002	129	129.442	0.993	179	179.010	0.990
30	30.289		80	80.565		130	130.435		180	180.000	
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ

$E = M + e \sin E.$

$e = 0.02$											
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	0.510	30	30.583	1.017	80	81.132	1.003	130	130.866	0.987
0.5	0.510	0.510	31	31.600	1.017	81	82.135	1.003	131	131.853	0.987
1.0	1.020	0.511	32	32.617	1.018	82	83.138	1.002	132	132.840	0.987
1.5	1.531	0.510	33	33.635	1.017	83	84.140	1.002	133	133.827	0.986
2.0	2.041	0.510	34	34.652	1.016	84	85.142	1.001	134	134.813	0.986
2.5	2.551	0.510	35	35.668	1.016	85	86.143	1.001	135	135.799	0.986
3.0	3.061	0.510	36	36.684	1.017	86	87.144	1.001	136	136.785	0.985
3.5	3.571	0.511	37	37.701	1.016	87	88.145	1.000	137	137.770	0.985
4.0	4.082	0.510	38	38.717	1.016	88	89.145	1.000	138	138.755	0.985
4.5	4.592	0.510	39	39.733	1.015	89	90.145	1.000	139	139.740	0.985
5.0	5.102	0.510	40	40.748	1.015	90	91.145	1.000	140	140.725	0.985
5.5	5.612	0.510	41	41.763	1.015	91	92.145	0.999	141	141.710	0.984
6.0	6.122	0.510	42	42.778	1.015	92	93.144	0.999	142	142.694	0.984
6.5	6.632	0.510	43	43.793	1.015	93	94.143	0.998	143	143.678	0.985
7.0	7.142	0.510	44	44.808	1.014	94	95.141	0.998	144	144.663	0.984
7.5	7.652	0.510	45	45.822	1.014	95	96.139	0.998	145	145.647	0.983
8.0	8.162	0.510	46	46.836	1.014	96	97.137	0.997	146	146.630	0.983
8.5	8.672	0.510	47	47.850	1.013	97	98.134	0.997	147	147.613	0.983
9.0	9.182	0.510	48	48.863	1.013	98	99.131	0.997	148	148.596	0.984
9.5	9.692	0.510	49	49.876	1.013	99	100.128	0.997	149	149.580	0.983
10.0	10.202	0.510	50	50.889	1.013	100	101.125	0.996	150	150.563	0.983
10.5	10.712	0.510	51	51.902	1.012	101	102.121	0.996	151	151.546	0.983
11.0	11.222	0.510	52	52.914	1.012	102	103.117	0.995	152	152.529	0.982
11.5	11.732	0.510	53	53.926	1.012	103	104.112	0.994	153	153.511	0.983
12.0	12.242	0.510	54	54.938	1.011	104	105.106	0.995	154	154.494	0.982
12.5	12.752	0.510	55	55.949	1.011	105	106.101	0.994	155	155.476	0.982
13.0	13.262	0.510	56	56.960	1.011	106	107.095	0.994	156	156.458	0.982
13.5	13.772	0.510	57	57.971	1.011	107	108.089	0.994	157	157.440	0.982
14.0	14.282	0.510	58	58.982	1.011	108	109.083	0.993	158	158.422	0.982
14.5	14.792	0.510	59	58.993	1.010	109	110.076	0.993	159	159.404	0.982
15.0	15.302	0.510	60	61.003	1.009	110	111.069	0.993	160	160.386	0.981
15.5	15.812	0.510	61	62.012	1.009	111	112.062	0.993	161	161.367	0.981
16.0	16.322	0.509	62	63.021	1.009	112	113.055	0.992	162	162.348	0.981
16.5	16.831	0.510	63	64.030	1.009	113	114.047	0.991	163	163.329	0.981
17.0	17.341	0.510	64	65.039	1.008	114	115.038	0.992	164	164.310	0.981
17.5	17.851	0.509	65	66.047	1.008	115	116.030	0.991	165	165.291	0.981
18.0	18.360	0.510	66	67.055	1.008	116	117.021	0.991	166	166.272	0.981
18.5	18.870	0.510	67	68.063	1.007	117	118.012	0.990	167	167.253	0.981
19.0	19.380	0.510	68	69.070	1.007	118	119.002	0.990	168	168.234	0.981
19.5	19.890	0.510	69	70.077	1.007	119	119.992	0.990	169	169.215	0.981
20	20.400	1.019	70	71.084	1.006	120	120.982	0.990	170	170.196	0.980
21	21.419	1.018	71	72.090	1.006	121	121.972	0.989	171	171.176	0.980
22	22.437	1.019	72	73.096	1.006	122	122.961	0.990	172	172.156	0.981
23	23.456	1.019	73	74.102	1.005	123	123.951	0.989	173	173.137	0.980
24	24.475	1.018	74	75.107	1.005	124	124.940	0.989	174	174.117	0.981
25	25.493	1.019	75	76.112	1.005	125	125.929	0.988	175	175.098	0.980
26	26.512	1.018	76	77.117	1.004	126	126.917	0.987	176	176.078	0.981
27	27.530	1.018	77	78.121	1.004	127	127.904	0.987	177	177.059	0.980
28	28.548	1.017	78	79.125	1.004	128	128.891	0.988	178	178.039	0.981
29	29.565	1.018	79	80.129	1.003	129	129.879	0 987	179	179.020	0.980
30	30.583		80	81.132		130	130.866		180	180.000	
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ

$E = M + e \sin E.$

$e = 0.03$

M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	0.515	30	30.882	1.026	80	81.701	1.004	130	131.291	0.981
0.5	0.515	0.516	31	31.908	1.026	81	82.705	1.003	131	132.272	0.980
1.0	1.031	0.515	32	32.934	1.026	82	83.708	1.003	132	133.252	0.980
1.5	1.546	0.516	33	33.960	1.026	83	84.711	1.003	133	134.232	0.979
2.0	2.062	0.515	34	34.986	1.025	84	85.714	1.002	134	135.211	0.979
2.5	2.577	0.516	35	36.011	1.024	85	86.716	1.001	135	136.190	0.979
3.0	3.093	0.515	36	37.035	1.025	86	87.717	1.001	136	137.169	0.978
3.5	3.608	0.516	37	38.060	1.024	87	88.718	1.001	137	138.147	0.978
4.0	4.124	0.516	38	39.084	1.024	88	89.719	1.000	138	139.125	0.977
4.5	4.640	0.516	39	40.108	1.023	89	90.719	0.999	139	140.102	0.977
5.0	5.156	0.515	40	41.131	1.022	90	91.718	0.998	140	141.079	0.977
5.5	5.671	0.515	41	42.153	1.023	91	92.716	0.998	141	142.056	0.977
6.0	6.186	0.515	42	43.176	1.022	92	93.714	0.998	142	143.033	0.977
6.5	6.701	0.515	43	44.198	1.022	93	94.712	0.998	143	144.010	0.976
7.0	7.216	0.515	44	45.220	1.021	94	95.710	0.997	144	144.986	0.976
7.5	7.731	0.515	45	46.241	1.021	95	96.707	0.996	145	145.962	0.976
8.0	8.246	0.515	46	47.262	1.020	96	97.703	0.996	146	146.938	0.976
8.5	8.761	0.515	47	48.282	1.021	97	98.699	0.995	147	147.914	0.975
9.0	9.276	0.515	48	49.303	1.020	98	99.694	0.995	148	148.889	0.975
9.5	9.791	0.515	49	50.323	1.019	99	100.689	0.995	149	149.864	0.974
10.0	10.306	0.515	50	51.342	1.019	100	101.684	0.994	150	150.838	0.974
10.5	10.821	0.515	51	52.361	1.018	101	102.678	0.993	151	151.812	0.974
11.0	11.336	0.515	52	53.379	1.018	102	103.671	0.992	152	152.786	0.974
11.5	11.851	0.515	53	54.397	1.018	103	104.663	0.992	153	153.760	0.974
12.0	12.366	0.516	54	55.415	1.017	104	105.655	0.992	154	154.734	0.974
12.5	12.882	0.515	55	56.432	1.016	105	106.647	0.991	155	155.708	0.973
13.0	13.397	0.515	56	57.448	1.016	106	107.638	0.990	156	156.681	0.973
13.5	13.912	0.515	57	58.464	1.016	107	108.628	0.990	157	157.654	0.973
14.0	14.427	0.516	58	59.480	1.016	108	109.618	0.990	158	158.627	0.972
14.5	14.943	0.515	59	60.496	1.015	109	110.608	0.990	159	159.599	0.973
15.0	15.458	0.515	60	61.511	1.014	110	111.598	0.989	160	160.572	0.972
15.5	15.973	0.515	61	62.525	1.013	111	112.587	0.988	161	161.544	0.972
16.0	16.488	0.515	62	63.538	1.014	112	113.575	0.988	162	162.516	0.972
16.5	17.003	0.514	63	64.552	1.013	113	114.563	0.987	163	163.488	0.972
17.0	17.517	0.515	64	65.565	1.012	114	115.550	0.987	164	164.460	0.972
17.5	18.032	0.514	65	66.577	1.012	115	116.537	0.987	165	165.432	0.972
18.0	18.546	0.515	66	67.589	1.011	116	117.524	0.986	166	166.404	0.972
18.5	19.061	0.515	67	68.600	1.011	117	118.510	0.986	167	167.376	0.971
19.0	19.576	0.515	68	69.611	1.011	118	119.496	0.985	168	168.347	0.972
19.5	20.091	0.514	69	70.622	1.010	119	120.481	0.985	169	169.319	0.972
20	20.605	1.029	70	71.632	1.009	120	121.466	0.984	170	170.291	0.971
21	21.634	1.029	71	72.641	1.008	121	122.450	0.984	171	171.262	0.971
22	22.663	1.028	72	73.649	1.008	122	123.434	0.984	172	172.233	0.971
23	23.691	1.028	73	74.657	1.008	123	124.418	0.983	173	173.204	0.970
24	24.719	1.028	74	75.665	1.007	124	125.401	0.983	174	174.174	0.971
25	25.747	1.028	75	76.672	1.007	125	126.384	0.982	175	175.145	0.971
26	26.775	1.027	76	77.679	1.006	126	127.366	0.982	176	176.116	0.971
27	27.802	1.027	77	78.685	1.006	127	128.348	0.981	177	177.087	0.971
28	28.829	1.027	78	79.691	1.005	128	129.329	0.981	178	178.058	0.971
29	29.856	1.026	79	80.696	1.005	129	130.310	0.981	179	179.029	0.971
30	30.882		80	81.701		130	131.291		180	180.000	
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ

$$E = M + e \sin E.$$

$e = 0.04$											
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	0.521	30	31.187	1.035	80	82.271	1.005	130	131.710	0.974
0.5	0.521	0.521	31	32.222	1.035	81	83.276	1.005	131	132.684	0.974
1.0	1.042	0.520	32	33.257	1.035	82	84.281	1.004	132	133.658	0.973
1.5	1.562	0.521	33	34.292	1.034	83	85.285	1.003	133	134.631	0.972
2.0	2.083	0.521	34	35.326	1.033	84	86.288	1.002	134	135.603	0.972
2.5	2.604	0.521	35	36.359	1.033	85	87.290	1.001	135	136.575	0.972
3.0	3.125	0.521	36	37.392	1.032	86	88.291	1.000	136	137.547	0.971
3.5	3.646	0.521	37	38.424	1.032	87	89.291	1.000	137	138.518	0.971
4.0	4.167	0.522	38	39.456	1.032	88	90.291	1.000	138	139.489	0.970
4.5	4.689	0.521	39	40.488	1.031	89	91.291	0.999	139	140.459	0.970
5.0	5.210	0.520	40	41.519	1.031	90	92.290	0.998	140	141.428	0.970
5.5	5.730	0.520	41	42.550	1.030	91	93.288	0.997	141	142.398	0.969
6.0	6.250	0.520	42	43.580	1.030	92	94.285	0.997	142	143.367	0.969
6.5	6.770	0.521	43	44.610	1.029	93	95.282	0.996	143	144.336	0.968
7.0	7.291	0.520	44	45.639	1.028	94	96.278	0.995	144	145.304	0.968
7.5	7.811	0.521	45	46.667	1.027	95	97.273	0.995	145	146.272	0.968
8.0	8.332	0.521	46	47.694	1.028	96	98.268	0.994	146	147.240	0.967
8.5	8.853	0.520	47	48.722	1.027	97	99.262	0.993	147	148.207	0.967
9.0	9.373	0.521	48	49.749	1.026	98	100.255	0.993	148	149.174	0.967
9.5	9.894	0.520	49	50.775	1.026	99	101.248	0.992	149	150.141	0.967
10.0	10.414	0.521	50	51.801	1.025	100	102.240	0.991	150	151.108	0.966
10.5	10.935	0.520	51	52.826	1.024	101	103.231	0.991	151	152.074	0.965
11.0	11.455	0.521	52	53.850	1.024	102	104.222	0.990	152	153.039	0.966
11.5	11.976	0.520	53	54.874	1.023	103	105.212	0.989	153	154.005	0.965
12.0	12.496	0.520	54	55.897	1.023	104	106.201	0.988	154	154.970	0.965
12.5	13.016	0.520	55	56.920	1.022	105	107.189	0.988	155	155.935	0.965
13.0	13.536	0.520	56	57.942	1.021	106	108.177	0.987	156	156.900	0.964
13.5	14.056	0.520	57	58.963	1.021	107	109.164	0.987	157	157.864	0.964
14.0	14.576	0.520	58	59.984	1.020	108	110.151	0.986	158	158.828	0.964
14.5	15.096	0.520	59	61.004	1.019	109	111.137	0.986	159	159.792	0.964
15.0	15.616	0.520	60	62.023	1.019	110	112.123	0.985	160	160.756	0.963
15.5	16.136	0.520	61	63.042	1.018	111	113.108	0.984	161	161.719	0.963
16.0	16.656	0.520	62	64.060	1.018	112	114.092	0.984	162	162.682	0.963
16.5	17.176	0.520	63	65.078	1.017	113	115.076	0.983	163	163.645	0.963
17.0	17.696	0.520	64	66.095	1.016	114	116.059	0.983	164	164.608	0.963
17.5	18.216	0.520	65	67.111	1.016	115	117.042	0.982	165	165.571	0.963
18.0	18.736	0.520	66	68.127	1.015	116	118.024	0.981	166	166.534	0.963
18.5	19.256	0.520	67	69.142	1.014	117	119.005	0.980	167	167.497	0.963
19.0	19.776	0.520	68	70.156	1.013	118	119.985	0.980	168	168.460	0.962
19.5	20.296	0.519	69	71.169	1.013	119	120.965	0.979	169	169.422	0.962
20	20.815	1.038	70	72.182	1.012	120	121.944	0.979	170	170.384	0.962
21	21.853	1.038	71	73.194	1.011	121	122.923	0.979	171	171.346	0.961
22	22.891	1.039	72	74.205	1.011	122	123.902	0.978	172	172.307	0.962
23	23.930	1.038	73	75.216	1.010	123	124.880	0.978	173	173.269	0.962
24	24.968	1.037	74	76.226	1.009	124	125.858	0.977	174	174.231	0.961
25	26.005	1.037	75	77.235	1.008	125	126.835	0.976	175	175.192	0.962
26	27.042	1.037	76	78.243	1.008	126	127.811	0.975	176	176.154	0.962
27	28.079	1.037	77	79.251	1.007	127	128.786	0.975	177	177.116	0.961
28	29.116	1.035	78	80.258	1.007	128	129.761	0.974	178	178.077	0.962
29	30.151	1.036	79	81.265	1.006	129	130.735	0.975	179	179.039	0.961
30	31.187		80	82.271		130	131.710		180	180.000	
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ

$$E = M + e \sin E.$$

						e = 0.05					
M	*E*	*Δ*	*M*	*E*	*Δ*	*M*	*E*	*Δ*	*M*	*E*	*Δ*
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	0.526	30	31.497	1.044	80	82.842	1.006	130	132.124	0.968
0.5	0.526	0.527	31	32.541	1.044	81	83.848	1.005	131	133.092	0.967
1.0	1.053	0.526	32	33.585	1.044	82	84.853	1.005	132	134.059	0.966
1.5	1.579	0.527	33	34.629	1.042	83	85.858	1.003	133	135.025	0.965
2.0	2.106	0.526	34	35.671	1.042	84	86.861	1.002	134	135.990	0.965
2.5	2.632	0.526	35	36.713	1.041	85	87.863	1.001	135	136.955	0.965
3.0	3.158	0.526	36	37.754	1.041	86	88.864	1.001	136	137.920	0.964
3.5	3.684	0.526	37	38.795	1.040	87	89.865	0.999	137	138.884	0.963
4.0	4.210	0.527	38	39.835	1.040	88	90.864	0.999	138	139.847	0.963
4.5	4.737	0.527	39	40.875	1.039	89	91.863	0.998	139	140.810	0.962
5.0	5.263	0.526	40	41.914	1.038	90	92.861	0.997	140	141.772	0.962
5.5	5.789	0.526	41	42.952	1.038	91	93.858	0.996	141	142.734	0.962
6.0	6.315	0.526	42	43.990	1.037	92	94.854	0.995	142	143.696	0.961
6.5	6.841	0.526	43	45.027	1.036	93	95.849	0.995	143	144.657	0.961
7.0	7.367	0.526	44	46.063	1.035	94	96.844	0.994	144	145.618	0.960
7.5	7.893	0.526	45	47.098	1.035	95	97.838	0.993	145	146.578	0.960
8.0	8.419	0.526	46	48.133	1.034	96	98.831	0.992	146	147.538	0.959
8.5	8.945	0.526	47	49.167	1.034	97	99.823	0.991	147	148.497	0.959
9.0	9.471	0.526	48	50.201	1.033	98	100.814	0.990	148	149.456	0.959
9.5	9.997	0.526	49	51.234	1.032	99	101.804	0.990	149	150.415	0.958
10.0	10.523	0.526	50	52.266	1.031	100	102.794	0.989	150	151.373	0.958
10.5	11.049	0.526	51	53.297	1.030	101	103.783	0.987	151	152.331	0.957
11.0	11.575	0.526	52	54.327	1.029	102	104.770	0.987	152	153.288	0.957
11.5	12.101	0.525	53	55.356	1.030	103	105.757	0.986	153	154.245	0.957
12.0	12.626	0.526	54	56.386	1.028	104	106.743	0.986	154	155.202	0.957
12.5	13.152	0.525	55	57.414	1.027	105	107.729	0.984	155	156.159	0.956
13.0	13.677	0.526	56	58.441	1.026	106	108.713	0.984	156	157.115	0.956
13.5	14.203	0.525	57	59.467	1.026	107	109.697	0.983	157	158.071	0.955
14.0	14.728	0.526	58	60.493	1.025	108	110.680	0.982	158	159.026	0.955
14.5	15.254	0.525	59	61.518	1.024	109	111.662	0.982	159	159.981	0.955
15.0	15.779	0.525	60	62.542	1.023	110	112.644	0.981	160	160.936	0.955
15.5	16.304	0.525	61	63.565	1.022	111	113.625	0.980	161	161.891	0.954
16.0	16.829	0.525	62	64.587	1.022	112	114.605	0.979	162	162.845	0.954
16.5	17.354	0.525	63	65.609	1.021	113	115.584	0.978	163	163.799	0.954
17.0	17.879	0.525	64	66.630	1.020	114	116.562	0.978	164	164.753	0.954
17.5	18.404	0.525	65	67.650	1.019	115	117.540	0.977	165	165.707	0.954
18.0	18.929	0.525	66	68.669	1.018	116	118.517	0.976	166	166.661	0.954
18.5	19.454	0.525	67	69.687	1.017	117	119.493	0.976	167	167.615	0.953
19.0	19.979	0.525	68	70.704	1.017	118	120.469	0.975	168	168.568	0.954
19.5	20.504	0.524	69	71.721	1.015	119	121.444	0.974	169	169.522	0.953
20	21.028	1.049	70	72.736	1.014	120	122.418	0.974	170	170.475	0.953
21	22.077	1.048	71	73.750	1.014	121	123.392	0.973	171	171.428	0.952
22	23.125	1.048	72	74.764	1.013	122	124.365	0.973	172	172.380	0.953
23	24.173	1.048	73	75.777	1.012	123	125.338	0.971	173	173.333	0.952
24	25.221	1.047	74	76.789	1.011	124	126.309	0.971	174	174.285	0.953
25	26.268	1.047	75	77.800	1.010	125	127.280	0.970	175	175.238	0.952
26	27.315	1.046	76	78.810	1.009	126	128.250	0.969	176	176.190	0.953
27	28.361	1.046	77	79.819	1.009	127	129.219	0.969	177	177.143	0.952
28	29.407	1.045	78	80.828	1.008	128	130.188	0.968	178	178.095	0.953
29	30.452	1.045	79	81.836	1.006	129	131.156	0.968	179	179.048	0.952
30	31.497		80	82.842		130	132.124		180	180.000	
M	*E*	*Δ*	*M*	*E*	*Δ*	*M*	*E*	*Δ*	*M*	*E*	*Δ*

$E = M + e \sin E.$

$e = 0.06$

M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	0.532	30	31.813	1.053	80	83.414	1.007	130	132.533	0.961
0.5	0.532	0.532	31	32.866	1.053	81	84.421	1.005	131	135.494	0.960
1.0	1.064	0.532	32	33.919	1.052	82	85.426	1.005	132	134.454	0.960
1.5	1.596	0.531	33	34.971	1.051	83	86.431	1.003	133	135.414	0.958
2.0	2.127	0.532	34	36.022	1.051	84	87.434	1.002	134	136.372	0.958
2.5	2.659	0.532	35	37.073	1.050	85	88.436	1.001	135	137.330	0.958
3.0	3.191	0.532	36	38.123	1.049	86	89.437	1.000	136	138.288	0.957
3.5	3.723	0.532	37	39.172	1.048	87	90.437	0.999	137	139.245	0.956
4.0	4.255	0.532	38	40.220	1.048	88	91.436	0.998	138	140.201	0.955
4.5	4.787	0.532	39	41.268	1.047	89	92.434	0.997	139	141.156	0.955
5.0	5.319	0.531	40	42.315	1.046	90	93.431	0.996	140	142.111	0.954
5.5	5.850	0.532	41	43.361	1.045	91	94.427	0.994	141	143.065	0.954
6.0	6.382	0.532	42	44.406	1.044	92	95.421	0.994	142	144.019	0.954
6.5	6.914	0.531	43	45.450	1.043	93	96.415	0.993	143	144.973	0.953
7.0	7.445	0.532	44	46.493	1.043	94	97.408	0.992	144	145.926	0.953
7.5	7.977	0.532	45	47.536	1.042	95	98.400	0.991	145	146.879	0.952
8.0	8.509	0.532	46	48.578	1.041	96	99.391	0.990	146	147.831	0.951
8.5	9.041	0.532	47	49.619	1.040	97	100.381	0.989	147	148.782	0.951
9.0	9.573	0.531	48	50.659	1.039	98	101.370	0.988	148	149.733	0.951
9.5	10.104	0.531	49	51.698	1.038	99	102.358	0.987	149	150.684	0.950
10.0	10.635	0.531	50	52.736	1.037	100	103.345	0.986	150	151.634	0.950
10.5	11.166	0.531	51	53.773	1.036	101	104.331	0.984	151	152.584	0.949
11.0	11.697	0.531	52	54.809	1.035	102	105.315	0.984	152	153.533	0.949
11.5	12.228	0.531	53	55.844	1.034	103	106.299	0.983	153	154.482	0.948
12.0	12.759	0.531	54	56.878	1.034	104	107.282	0.982	154	155.430	0.948
12.5	13.290	0.531	55	57.912	1.033	105	108.264	0.981	155	156.378	0.948
13.0	13.821	0.531	56	58.945	1.031	106	109.245	0.980	156	157.326	0.947
13.5	14.352	0.531	57	59.976	1.030	107	110.225	0.979	157	158.273	0.947
14.0	14.883	0.531	58	61.006	1.030	108	111.204	0.979	158	159.220	0.947
14.5	15.414	0.530	59	62.036	1.029	109	112.183	0.978	159	160.167	0.946
15.0	15.944	0.531	60	63.065	1.027	110	113.161	0.976	160	161.113	0.946
15.5	16.475	0.530	61	64.092	1.026	111	114.137	0.976	161	162.059	0.946
16.0	17.005	0.531	62	65.118	1.026	112	115.113	0.975	162	163.005	0.945
16.5	17.536	0.531	63	66.144	1.024	113	116.088	0.973	163	163.950	0.946
17.0	18.067	0.530	64	67.168	1.024	114	117.061	0.973	164	164.896	0.945
17.5	18.597	0.530	65	68.192	1.022	115	118.034	0.972	165	165.841	0.945
18.0	19.127	0.530	66	69.214	1.021	116	119.006	0.971	166	166.786	0.945
18.5	19.657	0.530	67	70.235	1.020	117	119.977	0.971	167	167.731	0.945
19.0	20.187	0.530	68	71.255	1.019	118	120.948	0.970	168	168.676	0.945
19.5	20.717	0.529	69	72.274	1.018	119	121.918	0.969	169	169.621	0.944
20	21.246	1.059	70	73.292	1.017	120	122.887	0.968	170	170.565	0.944
21	22.305	1.059	71	74.309	1.016	121	123.855	0.967	171	171.509	0.943
22	23.364	1.058	72	75.325	1.015	122	124.822	0.967	172	172.452	0.944
23	24.422	1.057	73	76.340	1.014	123	125.789	0.966	173	173.396	0.943
24	25.479	1.057	74	77.354	1.013	124	126.755	0.965	174	174.339	0.944
25	26.536	1.057	75	78.367	1.011	125	127.720	0.964	175	175.283	0.943
26	27.593	1.056	76	79.378	1.010	126	128.684	0.963	176	176.226	0.944
27	28.649	1.055	77	80.388	1.010	127	129.647	0.962	177	177.170	0.943
28	29.704	1.055	78	81.398	1.009	128	130.609	0.962	178	178.113	0.944
29	30.759	1.054	79	82.407	1.007	129	131.571	0.962	179	179.057	0.943
30	31.813		80	83.414		130	132.533		180	180.000	
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ

$E = M + e \sin E.$

$e = 0.07$											
M	*E*	*Δ*	*M*	*E*	*Δ*	*M*	*E*	*Δ*	*M*	*E*	*Δ*
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	0.538	30	32.134	1.063	80	83.988	1.007	130	132.937	0.954
0.5	0.538	0.538	31	33.197	1.062	81	84.995	1.005	131	133.891	0.953
1.0	1.076	0.538	32	34.259	1.061	82	86.000	1.005	132	134.844	0.953
1.5	1.614	0.537	33	35.320	1.060	83	87.005	1.003	133	135.797	0.951
2.0	2.151	0.537	34	36.380	1.059	84	88.008	1.002	134	136.748	0.951
2.5	2.688	0.538	35	37.439	1.058	85	89.010	1.000	135	137.699	0.951
3.0	3.226	0.537	36	38.497	1.057	86	90.010	0.999	136	138.650	0.950
3.5	3.763	0.538	37	39.554	1.057	87	91.009	0.998	137	139.600	0.949
4.0	4.301	0.537	38	40.611	1.056	88	92.007	0.997	138	140.549	0.948
4.5	4.838	0.538	39	41.667	1.054	89	93.004	0.996	139	141.497	0.948
5.0	5.376	0.537	40	42.721	1.054	90	94.000	0.994	140	142.445	0.947
5.5	5.913	0.538	41	43.775	1.053	91	94.994	0.993	141	143.392	0.946
6.0	6.451	0.537	42	44.828	1.052	92	95.987	0.992	142	144.338	0.946
6.5	6.988	0.538	43	45.880	1.050	93	96.979	0.991	143	145.284	0.946
7.0	7.526	0.538	44	46.930	1.049	94	97.970	0.991	144	146.230	0.945
7.5	8.064	0.538	45	47.979	1.049	95	98.961	0.989	145	147.175	0.944
8.0	8.602	0.537	46	49.028	1.048	96	99.950	0.988	146	148.119	0.944
8.5	9.139	0.537	47	50.076	1.046	97	100.938	0.986	147	149.063	0.943
9.0	9.676	0.537	48	51.122	1.046	98	101.924	0.985	148	150.006	0.943
9.5	10.213	0.536	49	52.168	1.045	99	102.909	0.984	149	150.949	0.942
10.0	10.749	0.537	50	53.213	1.043	100	103.893	0.983	150	151.891	0.941
10.5	11.286	0.536	51	54.256	1.041	101	104.876	0.981	151	152.832	0.941
11.0	11.822	0.537	52	55.297	1.041	102	105.857	0.980	152	153.773	0.941
11.5	12.359	0.536	53	56.338	1.040	103	106.837	0.980	153	154.714	0.941
12.0	12.895	0.537	54	57.378	1.039	104	107.817	0.979	154	155.655	0.940
12.5	13.432	0.536	55	58.417	1.037	105	108.796	0.978	155	156.595	0.939
13.0	13.968	0.537	56	59.454	1.036	106	109.774	0.977	156	157.534	0.939
13.5	14.505	0.536	57	60.490	1.035	107	110.751	0.975	157	158.473	0.938
14.0	15.041	0.537	58	61.525	1.034	108	111.726	0.974	158	159.411	0.938
14.5	15.578	0.536	59	62.559	1.033	109	112.700	0.973	159	160.349	0.938
15.0	16.114	0.536	60	63.592	1.031	110	113.673	0.972	160	161.287	0.938
15.5	16.650	0.536	61	64.623	1.030	111	114.645	0.971	161	162.225	0.937
16.0	17.186	0.536	62	65.653	1.029	112	115.616	0.970	162	163.162	0.937
16.5	17.722	0.535	63	66.682	1.028	113	116.586	0.969	163	164.099	0.937
17.0	18.257	0.536	64	67.710	1.027	114	117.555	0.968	164	165.036	0.937
17.5	18.793	0.535	65	68.737	1.026	115	118.523	0.968	165	165.973	0.936
18.0	19.328	0.536	66	69.763	1.024	116	119.491	0.966	166	166.909	0.936
18.5	19.864	0.535	67	70.787	1.023	117	120.457	0.965	167	167.845	0.936
19.0	20.399	0.535	68	71.810	1.022	118	121.422	0.965	168	168.781	0.936
19.5	20.934	0.535	69	72.832	1.020	119	122.387	0.963	169	169.717	0.936
20	21.469	1.069	70	73.852	1.019	120	123.350	0.962	170	170.653	0.935
21	22.538	1.069	71	74.871	1.018	121	124.312	0.962	171	171.588	0.935
22	23.607	1.068	72	75.889	1.017	122	125.274	0.961	172	172.523	0.935
23	24.675	1.068	73	76.906	1.015	123	126.235	0.960	173	173.458	0.935
24	25.743	1.067	74	77.921	1.014	124	127.195	0.959	174	174.393	0.935
25	26.810	1.066	75	78.935	1.013	125	128.154	0.058	175	175.328	0.935
26	27.876	1.065	76	79.948	1.012	126	129.112	0.957	176	176.263	0.935
27	28.941	1.065	77	80.960	1.011	127	130.069	0.957	177	177.198	0.934
28	30.006	1.064	78	81.971	1.009	128	131.026	0.956	178	178.132	0.934
29	31.070	1.064	79	82.980	1.008	129	131.982	0.955	179	179.066	0.934
30	32.134		80	83.988		130	132.937		180	180.000	
M	*E*	*Δ*	*M*	*E*	*Δ*	*M*	*E*	*Δ*	*M*	*E*	*Δ*

$$E = M + e \sin E.$$

$e = 0.08$											
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	0.543	30	32.461	1.072	80	84.562	1.007	130	133.334	0.948
0.5	0.543	0.544	31	33.533	1.071	81	85.569	1.006	131	134.282	0.947
1.0	1.087	0.544	32	34.604	1.070	82	86.575	1.004	132	135.229	0.946
1.5	1.631	0.543	33	35.674	1.069	83	87.579	1.003	133	136.175	0.944
2.0	2.174	0.543	34	36.743	1.068	84	88.582	1.001	134	137.119	0.944
2.5	2.717	0.544	35	37.811	1.067	85	89.583	0.999	135	138.063	0.944
3.0	3.261	0.543	36	38.878	1.066	86	90.582	0.998	136	139.007	0.943
3.5	3.804	0.543	37	39.944	1.065	87	91.580	0.997	137	139.950	0.942
4.0	4.347	0.544	38	41.009	1.063	88	92.577	0.996	138	140.892	0.941
4.5	4.891	0.543	39	42.072	1.063	89	93.573	0.995	139	141.833	0.940
5.0	5.434	0.543	40	43.135	1.061	90	94.568	0.993	140	142.733	0.940
5.5	5.977	0.544	41	44.196	1.060	91	95.561	0.991	141	143.713	0.939
6.0	6.521	0.543	42	45.256	1.059	92	96.552	0.991	142	144.652	0.938
6.5	7.064	0.543	43	46.315	1.058	93	97.543	0.989	143	145.590	0.938
7.0	7.607	0.543	44	47.373	1.056	94	98.532	0.988	144	146.528	0.937
7.5	8.150	0.543	45	48.429	1.056	95	99.520	0.987	145	147.465	0.937
8.0	8.693	0.543	46	49.485	1.054	96	100.507	0.985	146	148.402	0.936
8.5	9.236	0.543	47	50.539	1.053	97	101.492	0.983	147	149.338	0.936
9.0	9.779	0.543	48	51.592	1.051	98	102.475	0.982	148	150.274	0.935
9.5	10.322	0.542	49	52.643	1.051	99	103.457	0.981	149	151.209	0.934
10.0	10.864	0.543	50	53.694	1.049	100	104.438	0.980	150	152.143	0.934
10.5	11.407	0.542	51	54.743	1.048	101	105.418	0.978	151	153.077	0.933
11.0	11.949	0.543	52	55.791	1.046	102	106.396	0.978	152	154.010	0.933
11.5	12.492	0.542	53	56.837	1.045	103	107.374	0.976	153	154.943	0.932
12.0	13.034	0.542	54	57.882	1.044	104	108.350	0.975	154	155.875	0.932
12.5	13.576	0.542	55	58.926	1.042	105	109.325	0.974	155	156.807	0.931
13.0	14.118	0.542	56	59.968	1.041	106	110.299	0.973	156	157.738	0.930
13.5	14.660	0.542	57	61.009	1.039	107	111.272	0.971	157	158.668	0.930
14.0	15.202	0.542	58	62.048	1.038	108	112.243	0.970	158	159.598	0.930
14.5	15.744	0.542	59	63.086	1.037	109	113.213	0.969	159	160.528	0.930
15.0	16.286	0.542	60	64.123	1.035	110	114.182	0.967	160	161.458	0.929
15.5	16.828	0.541	61	65.158	1.035	111	115.149	0.967	161	162.387	0.929
16.0	17.369	0.541	62	66.193	1.033	112	116.116	0.965	162	163.316	0.929
16.5	17.910	0.541	63	67.226	1.031	113	117.081	0.964	163	164.245	0.928
17.0	18.451	0.541	64	68.257	1.030	114	118.045	0.963	164	165.173	0.928
17.5	18.992	0.541	65	69.287	1.028	115	119.008	0.962	165	166.101	0.928
18.0	19.533	0.541	66	70.315	1.027	116	119.970	0.961	166	167.029	0.928
18.5	20.074	0.540	67	71.342	1.026	117	120.931	0.960	167	167.957	0.928
19.0	20.614	0.541	68	72.368	1.024	118	121.891	0.959	168	168.885	0.927
19.5	21.155	0.540	69	73.392	1.023	119	122.850	0.958	169	169.812	0.927
20	21.695	1.080	70	74.415	1.021	120	123.808	0.957	170	170.739	0.927
21	22.775	1.079	71	75.436	1.020	121	124.765	0.957	171	171.666	0.926
22	23.854	1.079	72	76.456	1.018	122	125.722	0.955	172	172.592	0.926
23	24.933	1.078	73	77.474	1.017	123	126.677	0.954	173	173.518	0.926
24	26.011	1.077	74	78.491	1.015	124	127.631	0.953	174	174.444	0.926
25	27.088	1.076	75	79.506	1.014	125	128.584	0.952	175	175.370	0.926
26	28.164	1.075	76	80.520	1.013	126	129.536	0.950	176	176.296	0.926
27	29.239	1.075	77	81.533	1.011	127	130.486	0.950	177	177.222	0.926
28	30.314	1.074	78	82.544	1.010	128	131.436	0.949	178	178.148	0.926
29	31.388	1.073	79	83.554	1.008	129	132.385	0.949	179	179.074	0.926
30	32.461		80	84.562		130	133.334		180	180.000	
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ

$$E = M + e \sin E.$$

M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ
$e = 0.09$											
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	0.549	30	32.794	1.081	80	85.137	1.007	130	133.727	0.941
0.5	0.549	0.550	31	33.875	1.080	81	86.144	1.006	131	134.668	0.940
1.0	1.099	0.550	32	34.955	1.079	82	87.150	1.004	132	135.608	0.939
1.5	1.649	0.549	33	36.034	1.078	83	88.154	1.002	133	136.547	0.938
2.0	2.198	0.549	34	37.112	1.077	84	89.156	1.001	134	137.485	0.937
2.5	2.747	0.550	35	38.189	1.075	85	90.157	0.998	135	138.422	0.936
3.0	3.297	0.549	36	39.264	1.074	86	91.155	0.997	136	139.358	0.936
3.5	3.846	0.549	37	40.338	1.073	87	92.152	0.996	137	140.294	0.935
4.0	4.395	0.549	38	41.411	1.072	88	93.148	0.994	138	141.229	0.934
4.5	4.944	0.550	39	42.483	1.071	89	94.142	0.993	139	142.163	0.933
5.0	5.494	0.549	40	43.554	1.069	90	95.135	0.992	140	143.096	0.933
5.5	6.043	0.549	41	44.623	1.068	91	96.127	0.990	141	144.029	0.932
6.0	6.592	0.549	42	45.691	1.066	92	97.117	0.988	142	144.961	0.931
6.5	7.141	0.549	43	46.757	1.065	93	98.105	0.986	143	145.892	0.930
7.0	7.690	0.549	44	47.822	1.063	94	99.091	0.985	144	146.822	0.930
7.5	8.239	0.549	45	48.885	1.062	95	100.076	0.985	145	147.752	0.929
8.0	8.788	0.549	46	49.947	1.061	96	101.061	0.983	146	148.681	0.928
8.5	9.337	0.549	47	51.008	1.059	97	102.044	0.980	147	149.609	0.928
9.0	9.886	0.549	48	52.067	1.058	98	103.024	0.979	148	150.537	0.927
9.5	10.435	0.548	49	53.125	1.057	99	104.003	0.978	149	151.464	0.927
10.0	10.983	0.549	50	54.182	1.055	100	104.981	0.976	150	152.391	0.926
10.5	11.532	0.548	51	55.237	1.053	101	105.957	0.975	151	153.317	0.925
11.0	12.080	0.548	52	56.290	1.051	102	106.932	0.974	152	154.242	0.925
11.5	12.628	0.548	53	57.341	1.050	103	107.906	0.973	153	155.167	0.924
12.0	13.176	0.548	54	58.391	1.049	104	108.879	0.971	154	156.091	0.924
12.5	13.724	0.547	55	59.440	1.047	105	109.850	0.970	155	157.015	0.923
13.0	14.271	0.548	56	60.487	1.046	106	110.820	0.969	156	157.938	0.922
13.5	14.819	0.547	57	61.533	1.044	107	111.789	0.967	157	158.860	0.922
14.0	15.366	0.548	58	62.577	1.042	108	112.756	0.966	158	159.782	0.922
14.5	15.914	0.547	59	63.619	1.041	109	113.722	0.964	159	160.704	0.922
15.0	16.461	0.547	60	64.660	1.039	110	114.686	0.963	160	161.626	0.921
15.5	17.008	0.547	61	65.699	1.038	111	115.649	0.962	161	162.547	0.921
16.0	17.555	0.547	62	66.737	1.036	112	116.611	0.960	162	163.468	0.920
16.5	18.102	0.547	63	67.773	1.034	113	117.571	0.959	163	164.388	0.920
17.0	18.649	0.547	64	68.807	1.033	114	118.530	0.958	164	165.308	0.920
17.5	19.196	0.546	65	69.840	1.032	115	119.488	0.957	165	166.288	0.919
18.0	19.742	0.547	66	70.872	1.030	116	120.445	0.956	166	167.147	0.919
18.5	20.289	0.546	67	71.902	1.028	117	121.401	0.955	167	168.066	0.919
19.0	20.835	0.546	68	72.930	1.026	118	122.356	0.953	168	168.985	0.919
19.5	21.381	0.545	69	73.956	1.024	119	123.309	0.953	169	169.904	0.919
20	21.926	1.091	70	74.980	1.023	120	124.262	0.951	170	170.823	0.918
21	23.017	1.090	71	76.003	1.021	121	125.213	0.950	171	171.741	0.919
22	24.107	1.088	72	77.024	1.020	122	126.163	0.950	172	172.660	0.918
23	25.195	1.088	73	78.044	1.018	123	127.113	0.948	173	173.578	0.917
24	26.283	1.087	74	79.062	1.017	124	128.061	0.946	174	174.495	0.917
25	27.370	1.087	75	80.079	1.015	125	129.007	0.946	175	175.412	0.918
26	28.457	1.085	76	81.094	1.013	126	129.953	0.945	176	176.330	0.918
27	29.542	1.085	77	82.107	1.012	127	130.898	0.944	177	177.248	0.917
28	30.627	1.084	78	83.119	1.010	128	131.842	0.943	178	178.165	0.918
29	31.711	1.083	79	84.129	1.008	129	132.785	0.942	179	179.083	0.917
30	32.794		80	85.137		130	133.727		180	180.000	
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ

$E = M + e \sin E.$

$e = 0.10$

M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	0.556	30	33.132	1.091	80	85.714	1.006	130	134.114	0.935
0.5	0.556	0.555	31	34.223	1.089	81	86.720	1.005	131	135.049	0.933
1.0	1.111	0.556	32	35.312	1.088	82	87.725	1.003	132	135.982	0.932
1.5	1.667	0.555	33	36.400	1.087	83	88.728	1.002	133	136.914	0.931
2.0	2.222	0.556	34	37.487	1.086	84	89.730	0.999	134	137.845	0.930
2.5	2.778	0.555	35	38.573	1.084	85	90.729	0.998	135	138.775	0.930
3.0	3.333	0.556	36	39.657	1.082	86	91.727	0.996	136	139.705	0.929
3.5	3.889	0.555	37	40.739	1.081	87	92.723	0.994	137	140.634	0.928
4.0	4.444	0.555	38	41.820	1.080	88	93.717	0.993	138	141.562	0.927
4.5	4.999	0.556	39	42.900	1.079	89	94.710	0.991	139	142.489	0.926
5.0	5.555	0.555	40	43.979	1.077	90	95.701	0.989	140	143.415	0.925
5.5	6.110	0.555	41	45.056	1.075	91	96.690	0.988	141	144.340	0.925
6.0	6.665	0.555	42	46.131	1.073	92	97.678	0.986	142	145.265	0.924
6.5	7.220	0.555	43	47.204	1.072	93	98.664	0.984	143	146.189	0.923
7.0	7.775	0.555	44	48.276	1.071	94	99.648	0.983	144	147.112	0.922
7.5	8.330	0.555	45	49.347	1.069	95	100.631	0.982	145	148.034	0.921
8.0	8.885	0.555	46	50.416	1.067	96	101.613	0.980	146	148.955	0.921
8.5	9.440	0.554	47	51.483	1.065	97	102.593	0.977	147	149.876	0.920
9.0	9.994	0.555	48	52.548	1.064	98	103.570	0.976	148	150.796	0.920
9.5	10.549	0.554	49	53.612	1.063	99	104.546	0.975	149	151.716	0.919
10.0	11.103	0.555	50	54.675	1.061	100	105.521	0.973	150	152.635	0.918
10.5	11.658	0.554	51	55.736	1.059	101	106.494	0.971	151	153.553	0.917
11.0	12.212	0.554	52	56.795	1.057	102	107.465	0.970	152	154.470	0.917
11.5	12.766	0.554	53	57.852	1.055	103	108.435	0.969	153	155.387	0.916
12.0	13.320	0.554	54	58.907	1.053	104	109.404	0.967	154	156.303	0.916
12.5	13.874	0.554	55	59.960	1.052	105	110.371	0.966	155	157.219	0.915
13.0	14.428	0.554	56	61.012	1.050	106	111.337	0.965	156	158.134	0.915
13.5	14.982	0.553	57	62.062	1.048	107	112.302	0.963	157	159.049	0.914
14.0	15.535	0.553	58	63.110	1.047	108	113.265	0.961	158	159.963	0.914
14.5	16.088	0.553	59	64.157	1.045	109	114.226	0.960	159	160.877	0.913
15.0	16.641	0.553	60	65.202	1.043	110	115.186	0.958	160	161.790	0.913
15.5	17.194	0.552	61	66.245	1.040	111	116.144	0.957	161	162.703	0.913
16.0	17.746	0.553	62	67.285	1.039	112	117.101	0.956	162	163.616	0.912
16.5	18.299	0.552	63	68.324	1.038	113	118.057	0.954	163	164.528	0.912
17.0	18.851	0.552	64	69.362	1.036	114	119.011	0.953	164	165.440	0.912
17.5	19.403	0.552	65	70.398	1.034	115	119.964	0.952	165	166.352	0.911
18.0	19.955	0.552	66	71.432	1.032	116	120.916	0.950	166	167.263	0.911
18.5	20.507	0.552	67	72.464	1.029	117	121.866	0.949	167	168.174	0.911
19.0	21.059	0.551	68	73.493	1.028	118	122.815	0.948	168	169.085	0.911
19.5	21.610	0.551	69	74.521	1.027	119	123.763	0.947	169	169.996	0.910
20	22.161	1.102	70	75.548	1.025	120	124.710	0.946	170	170.906	0.910
21	23.263	1.101	71	76.573	1.023	121	125.656	0.945	171	171.816	0.910
22	24.364	1.099	72	77.596	1.021	122	126.601	0.943	172	172.726	0.910
23	25.463	1.099	73	78.617	1.019	123	127.544	0.942	173	173.636	0.909
24	26.562	1.098	74	79.636	1.017	124	128.486	0.940	174	174.545	0.909
25	27.660	1.096	75	80.653	1.016	125	129.426	0.940	175	175.454	0.910
26	28.756	1.095	76	81.669	1.014	126	130.366	0.938	176	176.364	0.909
27	29.851	1.095	77	82.683	1.012	127	131.304	0.938	177	177.273	0.909
28	30.946	1.094	78	83.695	1.010	128	132.242	0.937	178	178.182	0.909
29	32.040	1.092	79	84.705	1.009	129	133.179	0.935	179	179.081	0.909
30	33.132		80	85.714		130	134.114		180	180.000	
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ

$$E = M + e \sin E.$$

$e = 0.11$

M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	0.562	30	33.477	1.101	80	86.288	1.006	130	134.496	0.928
0.5	0.562	0.561	31	34.578	1.099	81	87.294	1.004	131	135.424	0.927
1.0	1.123	0.562	32	35.677	1.097	82	88.298	1.002	132	136.351	0.926
1.5	1.685	0.562	33	36.774	1.095	83	89.300	1.001	133	137.277	0.924
2.0	2.247	0.562	34	37.869	1.095	84	90.301	1.000	134	138.201	0.923
2.5	2.809	0.562	35	38.964	1.093	85	91.301	0.997	135	139.124	0.923
3.0	3.371	0.561	36	40.057	1.090	86	92.298	0.995	136	140.047	0.922
3.5	3.932	0.562	37	41.147	1.089	87	93.293	0.992	137	140.969	0.921
4.0	4.494	0.562	38	42.236	1.088	88	94.285	0.990	138	141.890	0.920
4.5	5.056	0.561	39	43.324	1.087	89	95.275	0.989	139	142.810	0.919
5.0	5.617	0.561	40	44.411	1.085	90	96.264	0.988	140	143.729	0.918
5.5	6.178	0.561	41	45.496	1.083	91	97.252	0.986	141	144.647	0.917
6.0	6.739	0.561	42	46.579	1.080	92	98.238	0.983	142	145.564	0.916
6.5	7.300	0.562	43	47.659	1.078	93	99.221	0.981	143	146.480	0.916
7.0	7.862	0.561	44	48.737	1.078	94	100.202	0.980	144	147.396	0.915
7.5	8.423	0.561	45	49.815	1.075	95	101.182	0.979	145	148.311	0.914
8.0	8.984	0.561	46	50.890	1.073	96	102.161	0.977	146	149.225	0.914
8.5	9.545	0.561	47	51.963	1.072	97	103.138	0.975	147	150.139	0.913
9.0	10.106	0.561	48	53.035	1.070	98	104.113	0.973	148	151.052	0.912
9.5	10.667	0.560	49	54.105	1.068	99	105.086	0.971	149	151.964	0.911
10.0	11.227	0.561	50	55.173	1.066	100	106.057	0.970	150	152.875	0.910
10.5	11.788	0.560	51	56.239	1.064	101	107.027	0.968	151	153.785	0.910
11.0	12.348	0.560	52	57.303	1.063	102	107.995	0.966	152	154.695	0.909
11.5	12.908	0.560	53	58.366	1.060	103	108.961	0.964	153	155.604	0.908
12.0	13.468	0.560	54	59.426	1.058	104	109.925	0.963	154	156.512	0.908
12.5	14.028	0.559	55	60.484	1.056	105	110.888	0.962	155	157.420	0.908
13.0	14.587	0.560	56	61.540	1.054	106	111.850	0.961	156	158.328	0.907
13.5	15.147	0.559	57	62.594	1.053	107	112.811	0.958	157	159.235	0.906
14.0	15.706	0.559	58	63.647	1.050	108	113.769	0.957	158	160.141	0.906
14.5	16.265	0.559	59	64.697	1.048	109	114.726	0.955	159	161.047	0.905
15.0	16.824	0.559	60	65.745	1.046	110	115.681	0.953	160	161.952	0.905
15.5	17.383	0.558	61	66.791	1.044	111	116.634	0.952	161	162.857	0.905
16.0	17.941	0.559	62	67.835	1.043	112	117.586	0.951	162	163.762	0.905
16.5	18.500	0.558	63	68.878	1.041	113	118.537	0.949	163	164.667	0.904
17.0	19.058	0.558	64	69.919	1.039	114	119.486	0.948	164	165.571	0.903
17.5	19.616	0.558	65	70.958	1.036	115	120.434	0.946	165	166.474	0.903
18.0	20.174	0.558	66	71.994	1.034	116	121.380	0.945	166	167.377	0.903
18.5	20.732	0.557	67	73.028	1.032	117	122.325	0.944	167	168.280	0.903
19.0	21.289	0.557	68	74.060	1.030	118	123.269	0.943	168	169.183	0.903
19.5	21.846	0.557	69	75.090	1.028	119	124.212	0.941	169	170.086	0.902
20	22.403	1.113	70	76.118	1.026	120	125.153	0.940	170	170.988	0.902
21	23.516	1.111	71	77.144	1.024	121	126.093	0.939	171	171.890	0.902
22	24.627	1.111	72	78.168	1.022	122	127.032	0.938	172	172.792	0.901
23	25.738	1.109	73	79.190	1.020	123	127.970	0.936	173	173.693	0.901
24	26.847	1.108	74	80.210	1.018	124	128.906	0.934	174	174.594	0.901
25	27.955	1.107	75	81.228	1.016	125	129.840	0.933	175	175.495	0.902
26	29.062	1.106	76	82.244	1.014	126	130.773	0.932	176	176.397	0.901
27	30.168	1.104	77	83.258	1.012	127	131.705	0.932	177	177.298	0.900
28	31.272	1.103	78	84.270	1.010	128	132.637	0.930	178	178.198	0.901
29	32.375	1.102	79	85.280	1.008	129	133.567	0.929	179	179.099	0.901
30	33.477		80	86.288		130	134.496		180	180.000	
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ

$$E = M + e \sin E.$$

$e = 0.12$

M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	0.568	30	33.829	1.110	80	86.865	1.005	130	134.873	0.922
0.5	0.568	0.568	31	34.939	1.108	81	87.870	1.003	131	135.795	0.920
1.0	1.136	0.569	32	36.047	1.106	82	88.873	1.001	132	136.715	0.919
1.5	1.705	0.568	33	37.153	1.105	83	89.874	1.000	133	137.634	0.917
2.0	2.273	0.568	34	38.258	1.103	84	90.874	0.997	134	138.551	0.917
2.5	2.841	0.568	35	39.361	1.101	85	91.871	0.995	135	139.468	0.916
3.0	3.409	0.568	36	40.462	1.100	86	92.866	0.992	136	140.384	0.915
3.5	3.977	0.568	37	41.562	1.098	87	93.858	0.991	137	141.299	0.914
4.0	4.545	0.568	38	42.660	1.096	88	94.849	0.990	138	142.213	0.913
4.5	5.113	0.567	39	43.756	1.094	89	95.839	0.987	139	143.126	0.912
5.0	5.680	0.568	40	44.850	1.092	90	96.826	0.985	140	144.038	0.911
5.5	6.248	0.568	41	45.942	1.090	91	97.811	0.983	141	144.949	0.910
6.0	6.816	0.567	42	47.032	1.088	92	98.794	0.981	142	145.859	0.909
6.5	7.383	0.568	43	48.120	1.086	93	99.775	0.979	143	146.768	0.909
7.0	7.951	0.568	44	49.206	1.084	94	100.754	0.977	144	147.677	0.908
7.5	8.519	0.567	45	50.290	1.082	95	101.731	0.976	145	148.585	0.906
8.0	9.086	0.567	46	51.372	1.080	96	102.707	0.974	146	149.491	0.906
8.5	9.653	0.567	47	52.452	1.078	97	103.681	0.971	147	150.397	0.905
9.0	10.220	0.567	48	53.530	1.075	98	104.652	0.969	148	151.302	0.904
9.5	10.787	0.567	49	54.605	1.073	99	105.621	0.968	149	152.206	0.904
10.0	11.354	0.567	50	55.678	1.071	100	106.589	0.966	150	153.110	0.903
10.5	11.921	0.566	51	56.749	1.069	101	107.555	0.964	151	154.013	0.903
11.0	12.487	0.566	52	57.818	1.068	102	108.519	0.962	152	154.916	0.901
11.5	13.053	0.566	53	58.886	1.065	103	109.481	0.960	153	155.817	0.901
12.0	13.619	0.566	54	59.951	1.063	104	110.441	0.959	154	156.718	0.901
12.5	14.185	0.566	55	61.014	1.061	105	111.400	0.958	155	157.619	0.900
13.0	14.751	0.566	56	62.075	1.058	106	112.358	0.957	156	158.519	0.899
13.5	15.317	0.565	57	63.133	1.056	107	113.315	0.954	157	159.418	0.898
14.0	15.882	0.565	58	64.189	1.054	108	114.269	0.952	158	160.316	0.898
14.5	16.447	0.565	59	65.243	1.052	109	115.221	0.950	159	161.214	0.898
15.0	17.012	0.565	60	66.295	1.049	110	116.171	0.949	160	162.112	0.897
15.5	17.577	0.564	61	67.344	1.047	111	117.120	0.947	161	163.009	0.897
16.0	18.141	0.564	62	68.391	1.045	112	118.067	0.946	162	163.906	0.897
16.5	18.705	0.564	63	69.436	1.043	113	119.013	0.944	163	164.803	0.896
17.0	19.269	0.564	64	70.479	1.041	114	119.957	0.943	164	165.699	0.895
17.5	19.833	0.563	65	71.520	1.039	115	120.900	0.941	165	166.594	0.895
18.0	20.396	0.564	66	72.559	1.037	116	121.841	0.939	166	167.489	0.895
18.5	20.960	0.563	67	73.596	1.034	117	122.780	0.938	167	168.384	0.895
19.0	21.523	0.563	68	74.630	1.031	118	123.718	0.937	168	169.279	0.895
19.5	22.086	0.563	69	75.661	1.029	119	124.655	0.936	169	170.174	0.894
20	22.649	1.124	70	76.690	1.027	120	125.591	0.934	170	171.068	0.894
21	23.773	1.122	71	77.717	1.025	121	126.525	0.933	171	171.962	0.894
22	24.895	1.121	72	78.742	1.023	122	127.458	0.932	172	172.856	0.894
23	26.016	1.120	73	79.765	1.021	123	128.390	0.930	173	173.750	0.893
24	27.136	1.119	74	80.786	1.018	124	129.320	0.928	174	174.643	0.893
25	28.255	1.118	75	81.804	1.016	125	130.248	0.927	175	175.536	0.893
26	29.373	1.116	76	82.820	1.015	126	131.175	0.926	176	176.429	0.893
27	30.489	1.114	77	83.835	1.012	127	132.101	0.926	177	177.322	0.893
28	31.603	1.114	78	84.847	1.010	128	133.027	0.924	178	178.215	0.892
29	32.717	1.112	79	85.857	1.008	129	133.951	0.922	179	179.107	0.893
30	33.829		80	86.865		130	134.873		180	180.000	
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ

$$E = M + e \sin E.$$

$e = 0.13$

M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	0.575	30	34.187	1.119	80	87.440	1.005	130	135.245	0.915
0.5	0.575	0.574	31	35.306	1.117	81	88.445	1.002	131	136.160	0.914
1.0	1.149	0.576	32	36.423	1.116	82	89.447	1.000	132	137.074	0.912
1.5	1.725	0.574	33	37.539	1.114	83	90.447	0.998	133	137.986	0.911
2.0	2.299	0.575	34	38.653	1.112	84	91.445	0.996	134	138.897	0.910
2.5	2.874	0.574	35	39.765	1.110	85	92.441	0.993	135	139.807	0.909
3.0	3.448	0.574	36	40.875	1.108	86	93.434	0.991	136	140.716	0.909
3.5	4.022	0.575	37	41.983	1.106	87	94.425	0.989	137	141.625	0.907
4.0	4.597	0.574	38	43.089	1.104	88	95.414	0.987	138	142.532	0.906
4.5	5.171	0.574	39	44.193	1.102	89	96.401	0.985	139	143.438	0.904
5.0	5.745	0.574	40	45.295	1.099	90	97.386	0.983	140	144.342	0.904
5.5	6.319	0.574	41	46.394	1.097	91	98.369	0.981	141	145.246	0.903
6.0	6.893	0.575	42	47.491	1.095	92	99.350	0.978	142	146.149	0.903
6.5	7.468	0.574	43	48.586	1.093	93	100.328	0.975	143	147.052	0.901
7.0	8.042	0.574	44	49.679	1.091	94	101.303	0.974	144	147.953	0.900
7.5	8.616	0.574	45	50.770	1.088	95	102.277	0.972	145	148.853	0.900
8.0	9.190	0.574	46	51.858	1.086	96	103.249	0.971	146	149.753	0.898
8.5	9.764	0.573	47	52.944	1.084	97	104.220	0.968	147	150.651	0.898
9.0	10.337	0.573	48	54.028	1.082	98	105.188	0.966	148	151.549	0.897
9.5	10.910	0.573	49	55.110	1.079	99	106.154	0.964	149	152.446	0.896
10.0	11.483	0.573	50	56.189	1.077	100	107.118	0.962	150	153.342	0.896
10.5	12.056	0.573	51	57.266	1.074	101	108.080	0.960	151	154.238	0.895
11.0	12.629	0.573	52	58.340	1.072	102	109.040	0.958	152	155.133	0.894
11.5	13.202	0.572	53	59.412	1.069	103	109.998	0.956	153	156.027	0.894
12.0	13.774	0.572	54	60.481	1.067	104	110.954	0.955	154	156.921	0.892
12.5	14.346	0.572	55	61.548	1.065	105	111.909	0.953	155	157.813	0.892
13.0	14.918	0.572	56	62.613	1.063	106	112.862	0.952	156	158.705	0.892
13.5	15.490	0.571	57	63.676	1.060	107	113.814	0.950	157	159.597	0.891
14.0	16.061	0.571	58	64.736	1.058	108	114.764	0.948	158	160.488	0.891
14.5	16.632	0.571	59	65.794	1.054	109	115.712	0.946	159	161.379	0.890
15.0	17.203	0.571	60	66.848	1.051	110	116.658	0.944	160	162.269	0.889
15.5	17.774	0.570	61	67.899	1.050	111	117.602	0.942	161	163.158	0.889
16.0	18.344	0.571	62	68.949	1.048	112	118.544	0.940	162	164.047	0.889
16.5	18.915	0.570	63	69.997	1.046	113	119.484	0.939	163	164.936	0.888
17.0	19.485	0.570	64	71.043	1.044	114	120.423	0.937	164	165.824	0.888
17.5	20.055	0.569	65	72.087	1.041	115	121.360	0.935	165	166.712	0.888
18.0	20.624	0.569	66	73.128	1.038	116	122.295	0.935	166	167.600	0.887
18.5	21.193	0.569	67	74.166	1.035	117	123.230	0.933	167	168.487	0.887
19.0	21.762	0.568	68	75.201	1.033	118	124.163	0.931	168	169.374	0.887
19.5	22.330	0.568	69	76.234	1.030	119	125.094	0.930	169	170.261	0.886
20	22.898	1.135	70	77.264	1.028	120	126.024	0.929	170	171.147	0.886
21	24.033	1.134	71	78.292	1.026	121	126.953	0.927	171	172.033	0.886
22	25.167	1.133	72	79.318	1.024	122	127.880	0.925	172	172.919	0.886
23	26.300	1.132	73	80.342	1.021	123	128.805	0.924	173	173.805	0.885
24	27.432	1.130	74	81.363	1.019	124	129.729	0.922	174	174.690	0.885
25	28.562	1.128	75	82.382	1.017	125	130.651	0.921	175	175.575	0.885
26	29.690	1.126	76	83.399	1.014	126	131.572	0.920	176	176.460	0.885
27	30.816	1.125	77	84.413	1.011	127	132.492	0.919	177	177.345	0.885
28	31.941	1.124	78	85.424	1.009	128	133.411	0.918	178	178.230	0.885
29	33.065	1.122	79	86.433	1.007	129	134.329	0.916	179	179.115	0.885
30	34.187		80	87.440		130	135.245		180	180.000	
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ

$$E = M + e \sin E.$$

$e = 0.14$

M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	0.581	30	34.550	1.129	80	88.015	1.004	130	135.612	0.908
0.5	0.581	0.581	31	35.679	1.127	81	89.019	1.002	131	136.520	0.907
1.0	1.162	0.582	32	36.806	1.125	82	90.021	0.998	132	137.427	0.906
1.5	1.744	0.581	33	37.931	1.123	83	91.019	0.996	133	138.333	0.904
2.0	2.325	0.582	34	39.054	1.121	84	92.015	0.994	134	139.237	0.904
2.5	2.907	0.581	35	40.175	1.119	85	93.009	0.992	135	140.141	0.903
3.0	3.488	0.581	36	41.294	1.117	86	94.001	0.989	136	141.044	0.901
3.5	4.069	0.581	37	42.411	1.114	87	94.990	0.987	137	141.945	0.900
4.0	4.650	0.581	38	43.525	1.112	88	95.977	0.984	138	142.845	0.899
4.5	5.231	0.581	39	44.637	1.109	89	96.961	0.982	139	143.744	0.898
5.0	5.812	0.581	40	45.746	1.107	90	97.943	0.980	140	144.642	0.897
5.5	6.393	0.581	41	46.853	1.104	91	98.923	0.978	141	145.539	0.896
6.0	6.974	0.581	42	47.957	1.102	92	99.901	0.976	142	146.435	0.895
6.5	7.555	0.580	43	49.059	1.100	93	100.877	0.973	143	147.330	0.895
7.0	8.135	0.580	44	50.159	1.097	94	101.850	0.971	144	148.225	0.893
7.5	8.715	0.581	45	51.256	1.095	95	102.821	0.969	145	149.118	0.892
8.0	9.296	0.580	46	52.351	1.092	96	103.790	0.967	146	150.010	0.891
8.5	9.876	0.580	47	53.443	1.090	97	104.757	0.964	147	150.901	0.891
9.0	10.456	0.580	48	54.533	1.087	98	105.721	0.962	148	151.792	0.890
9.5	11.036	0.579	49	55.620	1.085	99	106.683	0.960	149	152.682	0.889
10.0	11.615	0.580	50	56.705	1.082	100	107.643	0.958	150	153.571	0.888
10.5	12.195	0.579	51	57.787	1.079	101	108.601	0.956	151	154.459	0.887
11.0	12.774	0.579	52	58.866	1.077	102	109.557	0.955	152	155.346	0.887
11.5	13.353	0.579	53	59.943	1.074	103	110.512	0.952	153	156.233	0.886
12.0	13.932	0.578	54	61.017	1.071	104	111.464	0.950	154	157.119	0.886
12.5	14.510	0.578	55	62.088	1.069	105	112.414	0.949	155	158.005	0.885
13.0	15.088	0.578	56	63.157	1.066	106	113.363	0.947	156	158.890	0.884
13.5	15.666	0.578	57	64.223	1.064	107	114.310	0.945	157	159.774	0.883
14.0	16.244	0.578	58	65.287	1.061	108	115.255	0.942	158	160.657	0.883
14.5	16.822	0.577	59	66.348	1.058	109	116.197	0.941	159	161.540	0.882
15.0	17.399	0.577	60	67.406	1.055	110	117.138	0.939	160	162.422	0.882
15.5	17.976	0.576	61	68.461	1.053	111	118.077	0.938	161	163.304	0.882
16.0	18.552	0.577	62	69.514	1.050	112	119.015	0.935	162	164.186	0.881
16.5	19.129	0.576	63	70.564	1.047	113	119.950	0.934	163	165.067	0.881
17.0	19.705	0.576	64	71.611	1.045	114	120.884	0.932	164	165.948	0.880
17.5	20.281	0.575	65	72.656	1.043	115	121.816	0.930	165	166.828	0.880
18.0	20.856	0.575	66	73.699	1.040	116	122.746	0.929	166	167.708	0.879
18.5	21.431	0.575	67	74.739	1.037	117	123.675	0.927	167	168.587	0.880
19.0	22.006	0.575	68	75.776	1.034	118	124.602	0.926	168	169.467	0.879
19.5	22.581	0.574	69	76.810	1.031	119	125.528	0.924	169	170.346	0.878
20	23.155	1.147	70	77.841	1.029	120	126.452	0.923	170	171.224	0.879
21	24.302	1.145	71	78.870	1.027	121	127.375	0.921	171	172.103	0.878
22	25.447	1.144	72	79.897	1.024	122	128.296	0.919	172	172.981	0.878
23	26.591	1.142	73	80.921	1.021	123	129.215	0.918	173	173.859	0.877
24	27.733	1.141	74	81.942	1.019	124	130.133	0.916	174	174.736	0.878
25	28.874	1.139	75	82.961	1.016	125	131.049	0.915	175	175.614	0.878
26	30.013	1.137	76	83.977	1.014	126	131.964	0.914	176	176.492	0.877
27	31.150	1.135	77	84.991	1.011	127	132.878	0.913	177	177.369	0.877
28	32.285	1.133	78	86.002	1.008	128	133.791	0.911	178	178.246	0.877
29	33.418	1.132	79	87.010	1.005	129	134.702	0.910	179	179.123	0.877
30	34.550		80	88.015		130	135.612		180	180.000	
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ

$$E = M + e \sin E.$$

$e = 0.15$											
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	0.588	30	34.920	1.139	80	88.592	1.002	130	135.973	0.902
0.5	0.588	0.588	31	36.059	1.137	81	89.594	1.000	131	136.875	0.901
1.0	1.176	0.589	32	37.196	1.134	82	90.594	0.997	132	137.776	0.899
1.5	1.765	0.588	33	38.330	1.132	83	91.591	0.994	133	138.675	0.898
2.0	2.353	0.588	34	39.462	1.130	84	92.585	0.992	134	139.573	0.897
2.5	2.941	0.588	35	40.592	1.127	85	93.577	0.990	135	140.470	0.896
3.0	3.529	0.588	36	41.719	1.125	86	94.567	0.987	136	141.366	0.895
3.5	4.117	0.588	37	42.844	1.123	87	95.554	0.984	137	142.261	0.893
4.0	4.705	0.588	38	43.967	1.120	88	96.538	0.982	138	143.154	0.892
4.5	5.293	0.588	39	45.087	1.117	89	97.520	0.980	139	144.046	0.891
5.0	5.881	0.587	40	46.204	1.114	90	98.500	0.977	140	144.937	0.890
5.5	6.468	0.588	41	47.318	1.112	91	99.477	0.975	141	145.827	0.889
6.0	7.056	0.587	42	48.430	1.109	92	100.452	0.972	142	146.716	0.888
6.5	7.643	0.587	43	49.539	1.106	93	101.424	0.970	143	147.604	0.887
7.0	8.230	0.587	44	50.645	1.104	94	102.394	0.968	144	148.491	0.887
7.5	8.817	0.587	45	51.749	1.101	95	103.362	0.965	145	149.378	0.885
8.0	9.404	0.587	46	52.850	1.098	96	104.327	0.963	146	150.263	0.884
8.5	9.991	0.587	47	53.948	1.096	97	105.290	0.961	147	151.147	0.884
9.0	10.578	0.586	48	55.044	1.093	98	106.251	0.959	148	152.031	0.882
9.5	11.164	0.586	49	56.137	1.089	99	107.210	0.956	149	152.913	0.882
10.0	11.750	0.586	50	57.226	1.087	100	108.166	0.954	150	153.795	0.881
10.5	12.336	0.586	51	58.313	1.084	101	109.120	0.952	151	154.676	0.881
11.0	12.922	0.586	52	59.397	1.082	102	110.072	0.950	152	155.557	0.879
11.5	13.508	0.585	53	60.479	1.078	103	111.022	0.948	153	156.436	0.879
12.0	14.093	0.585	54	61.557	1.075	104	111.970	0.946	154	157.315	0.878
12.5	14.678	0.584	55	62.632	1.073	105	112.916	0.944	155	158.193	0.877
13.0	15.262	0.585	56	63.705	1.070	106	113 860	0.942	156	159.070	0.877
13.5	15.847	0.584	57	64.775	1.067	107	114.802	0.940	157	159.947	0.876
14.0	16.431	0.584	58	65.842	1.064	108	115.742	0.938	158	160.823	0.876
14.5	17.015	0.583	59	66.906	1.061	109	116.680	0.936	159	161.699	0.875
15.0	17.598	0.584	60	67.967	1.058	110	117.616	0.933	160	162.574	0.874
15.5	18.182	0.583	61	69.025	1.055	111	118.549	0.932	161	163.448	0.874
16.0	18.765	0.583	62	70.080	1.052	112	119.481	0.930	162	164.322	0.874
16.5	19.348	0.582	63	71.132	1.050	113	120.411	0.929	163	165.196	0.874
17.0	19.930	0.582	64	72.182	1.047	114	121.340	0.927	164	166.070	0.872
17.5	20.512	0.581	65	73.229	1.044	115	122.267	0.925	165	166.942	0.872
18.0	21.093	0.581	66	74.273	1.041	116	123.192	0.923	166	167.814	0.872
18.5	21.674	0.581	67	75.314	1.038	117	124.115	0.922	167	168.686	0.872
19.0	22.255	0.581	68	76.352	1.035	118	125.037	0.920	168	169.558	0.871
19.5	22.836	0.580	69	77.387	1.032	119	125.957	0.918	169	170.429	0.871
20	23.416	1.159	70	78.419	1.030	120	126.875	0.917	170	171.300	0.871
21	24.575	1.156	71	79.449	1.027	121	127.792	0.915	171	172.171	0.871
22	25.731	1.155	72	80.476	1.024	122	128.707	0.913	172	173.042	0.870
23	26.886	1.154	73	81.500	1.021	123	129.620	0.912	173	173.912	0.870
24	28.040	1.152	74	82.521	1.019	124	130.532	0.910	174	174.782	0.870
25	29.192	1.150	75	83.540	1.016	125	131.442	0.909	175	175.652	0.870
26	30.342	1.147	76	84.556	1.013	126	132.351	0.908	176	176.522	0.870
27	31.489	1.146	77	85.569	1.010	127	133.259	0.906	177	177.392	0.869
28	32.635	1.144	78	86.579	1.008	128	134.165	0.905	178	178.261	0.870
29	33.779	1.141	79	87.587	1.005	129	135.070	0.903	179	179.131	0.869
30	34.920		80	88.592		130	135.973		180	180.000	
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ

$$E \doteq M + e \sin E.$$

$e = 0.16$											
M	*E*	Δ	*M*	*E*	Δ	*M*	*E*	Δ	*M*	*E*	Δ
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	0.595	30	35.297	1.149	80	89.166	1.001	130	136.330	0.896
0.5	0.595	0.595	31	36.446	1.146	81	90.167	0.998	131	137.226	0.894
1.0	1.190	0.596	32	37.592	1.144	82	91.165	0.995	132	138.120	0.893
1.5	1.786	0.594	33	38.736	1.141	83	92.160	0.993	133	139.013	0.891
2.0	2.380	0.596	34	39.877	1.139	84	93.153	0.990	134	139.904	0.890
2.5	2.976	0.595	35	41.016	1.136	85	94.143	0.987	135	140.794	0.889
3.0	3.571	0.595	36	42.152	1.133	86	95.130	0.984	136	141.683	0.889
3.5	4.166	0.595	37	43.285	1.131	87	96.114	0.982	137	142.572	0.887
4.0	4.761	0.595	38	44.416	1.128	88	97.096	0.980	138	143.459	0.885
4.5	5.356	0.594	39	45.544	1.125	89	98.076	0.977	139	144.344	0.884
5.0	5.950	0.595	40	46.669	1.121	90	99.053	0.974	140	145.228	0.883
5.5	6.545	0.594	41	47.790	1.118	91	100.027	0.972	141	146.111	0.883
6.0	7.139	0.595	42	48.908	1.116	92	100.999	0.969	142	146.994	0.882
6.5	7.734	0.594	43	50.024	1.113	93	101.968	0.967	143	147.876	0.880
7.0	8.328	0.594	44	51.137	1.111	94	102.935	0.964	144	148.756	0.879
7.5	8.922	0.594	45	52.248	1.107	95	103.899	0.962	145	149.635	0.878
8.0	9.516	0.594	46	53.355	1.104	96	104.861	0.959	146	150.513	0.877
8.5	10.110	0.593	47	54.459	1.102	97	105.820	0.957	147	151.390	0.877
9.0	10.703	0.593	48	55.561	1.098	98	106.777	0.955	148	152.267	0.875
9.5	11.296	0.593	49	56.659	1.094	99	107.732	0.952	149	153.142	0.874
10.0	11.889	0.593	50	57.753	1.092	100	108.684	0.950	150	154.016	0.874
10.5	12.482	0.592	51	58.845	1.089	101	109.634	0.948	151	154.890	0.873
11.0	13.074	0.592	52	59.934	1.086	102	110.582	0.945	152	155.763	0.873
11.5	13.666	0.593	53	61.020	1.082	103	111.527	0.943	153	156.636	0.871
12.0	14.259	0.592	54	62.102	1.079	104	112.470	0.942	154	157.507	0.871
12.5	14.851	0.591	55	63.181	1.076	105	113.412	0.940	155	158.378	0.870
13.0	15.442	0.591	56	64.257	1.073	106	114.352	0.937	156	159.248	0.870
13.5	16.033	0.590	57	65.330	1.071	107	115.289	0.935	157	160.118	0.869
14.0	16.623	0.590	58	66.401	1.067	108	116.224	0.933	158	160.987	0.868
14.5	17.213	0.590	59	67.468	1.063	109	117.157	0.931	159	161.855	0.868
15.0	17.803	0.590	60	68.531	1.060	110	118.088	0.928	160	162.723	0.867
15.5	18.393	0.589	61	69.591	1.058	111	119.016	0.927	161	163.590	0.867
16.0	18.982	0.589	62	70.649	1.054	112	119.943	0.925	162	164.457	0.867
16.5	19.571	0.589	63	71.703	1.051	113	120.868	0.924	163	165.324	0.866
17.0	20.160	0.588	64	72.754	1.049	114	121.792	0.921	164	166.190	0.865
17.5	20.748	0.588	65	73.803	1.046	115	122.713	0.919	165	167.055	0.864
18.0	21.336	0.587	66	74.849	1.042	116	123.632	0.918	166	167.919	0.864
18.5	21.923	0.587	67	75.891	1.039	117	124.550	0.916	167	168.783	0.864
19.0	22.510	0.587	68	76.930	1.036	118	125.466	0.914	168	169.647	0.864
19.5	23.097	0.586	69	77.966	1.032	119	126.380	0.913	169	170.511	0.864
20	23.683	1.170	70	78.998	1.030	120	127.293	0.911	170	171.375	0.864
21	24.853	1.169	71	80.028	1.027	121	128.204	0.909	171	172.239	0.863
22	26.022	1.167	72	81.055	1.024	122	129.113	0.907	172	173.102	0.862
23	27.189	1.165	73	82.079	1.021	123	130.020	0.906	173	173.964	0.863
24	28.354	1.163	74	83.100	1.019	124	130.926	0.904	174	174.827	0.863
25	29.517	1.161	75	84.119	1.015	125	131.830	0.903	175	175.690	0.862
26	30.678	1.158	76	85.134	1.012	126	132.733	0.902	176	176.552	0.862
27	31.836	1.156	77	86.146	1.009	127	133.635	0.900	177	177.414	0.862
28	32.992	1.154	78	87.155	1.007	128	134.535	0.898	178	178.276	0.862
29	34.146	1.151	79	88.162	1.004	129	135.433	0.897	179	179.138	0.862
30	35.297		80	89.166		130	136.330		180	180.000	
M	*E*	Δ	*M*	*E*	Δ	*M*	*E*	Δ	*M*	*E*	Δ

$$E = M + e \sin E.$$

$e = 0.17$											
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	0.602	30	35.682	1.159	80	89.739	1.000	130	136.683	0.889
0.5	0.602	0.603	31	36.841	1.156	81	90.739	0.997	131	137.572	0.888
1.0	1.205	0.603	32	37.997	1.153	82	91.736	0.993	132	138.460	0.886
1.5	1.808	0.602	33	39.150	1.150	83	92.729	0.990	133	139.346	0.885
2.0	2.410	0.602	34	40.300	1.148	84	93.719	0.988	134	140.231	0.884
2.5	3.012	0.602	35	41.448	1.144	85	94.707	0.985	135	141.115	0.882
3.0	3.614	0.602	36	42.592	1.141	86	95.692	0.982	136	141.997	0.881
3.5	4.216	0.602	37	43.733	1.139	87	96.674	0.978	137	142.878	0.880
4.0	4.818	0.602	38	44.872	1.136	88	97.652	0.976	138	143.758	0.879
4.5	5.420	0.602	39	46.008	1.132	89	98.628	0.974	139	144.637	0.878
5.0	6.022	0.602	40	47.140	1.129	90	99.602	0.972	140	145.515	0.877
5.5	6.624	0.601	41	48.269	1.126	91	100.574	0.969	141	146.392	0.875
6.0	7.225	0.601	42	49.395	1.123	92	101.543	0.966	142	147.267	0.875
6.5	7.826	0.602	43	50.518	1.120	93	102.509	0.963	143	148.142	0.873
7.0	8.428	0.601	44	51.638	1.116	94	103.472	0.960	144	149.015	0.872
7.5	9.029	0.600	45	52.754	1.112	95	104.432	0.958	145	149.887	0.872
8.0	9.629	0.601	46	53.866	1.110	96	105.390	0.956	146	150.759	0.870
8.5	10.230	0.601	47	54.976	1.107	97	106.346	0.953	147	151.629	0.870
9.0	10.831	0.600	48	56.083	1.103	98	107.299	0.951	148	152.499	0.868
9.5	11.431	0.600	49	57.186	1.099	99	108.250	0.948	149	153.367	0.867
10.0	12.031	0.599	50	58.285	1.096	100	109.198	0.946	150	154.234	0.866
10.5	12.630	0.599	51	59.381	1.094	101	110.144	0.944	151	155.100	0.866
11.0	13.229	0.599	52	60.475	1.091	102	111.088	0.941	152	155.966	0.866
11.5	13.828	0.599	53	61.566	1.086	103	112.029	0.939	153	156.832	0.865
12.0	14.427	0.598	54	62.652	1.082	104	112.968	0.937	154	157.697	0.864
12.5	15.025	0.598	55	63.734	1.079	105	113.905	0.934	155	158.561	0.863
13.0	15.623	0.598	56	64.813	1.076	106	114.839	0.932	156	159.424	0.862
13.5	16.221	0.597	57	65.889	1.074	107	115.771	0.930	157	160.286	0.862
14.0	16.818	0.597	58	66.963	1.070	108	116.701	0.928	158	161.148	0.861
14.5	17.415	0.597	59	68.033	1.066	109	117.629	0.926	159	162.009	0.860
15.0	18.012	0.596	60	69.099	1.063	110	118.555	0.924	160	162.869	0.860
15.5	18.608	0.596	61	70.162	1.059	111	119.479	0.922	161	163.729	0.860
16.0	19.204	0.596	62	71.221	1.056	112	120.401	0.920	162	164.589	0.859
16.5	19.800	0.595	63	72.277	1.053	113	121.321	0.917	163	165.448	0.858
17.0	20.395	0.595	64	73.330	1.050	114	122.238	0.915	164	166.306	0.858
17.5	20.990	0.594	65	74.380	1.046	115	123.153	0.914	165	167.164	0.858
18.0	21.584	0.593	66	75.426	1.043	116	124.067	0.913	166	168.022	0.857
18.5	22.177	0.593	67	76.469	1.040	117	124.980	0.911	167	168.879	0.857
19.0	22.770	0.593	68	77.509	1.037	118	125.891	0.908	168	169.736	0.856
19.5	23.363	0.592	69	78.546	1.033	119	126.799	0.907	169	170.592	0.856
20	23.955	1.183	70	79.579	1.030	120	127.706	0.905	170	171.448	0.856
21	25.138	1.181	71	80.609	1.027	121	128.611	0.903	171	172.304	0.856
22	26.319	1.178	72	81.636	1.024	122	129.514	0.902	172	173.160	0.856
23	27.497	1.177	73	82.660	1.020	123	130.416	0.900	173	174.016	0.855
24	28.674	1.175	74	83.680	1.018	124	131.316	0.898	174	174.871	0.855
25	29.849	1.172	75	84.698	1.015	125	132.214	0.896	175	175.726	0.855
26	31.021	1.169	76	85.713	1.011	126	133.110	0.895	176	176.581	0.855
27	32.190	1.166	77	86.724	1.008	127	134.005	0.894	177	177.436	0.855
28	33.356	1.164	78	87.732	1.005	128	134.899	0.893	178	178.291	0.855
29	34.520	1.162	79	88.737	1.002	129	135.792	0.891	179	179.146	0.854
30	35.682		80	89.739		130	136.683		180	180.000	
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ

$$E = M + e \sin E.$$

$e = 0.18$

M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	0.610	30	36.074	1.168	80	90.312	0.998	130	137.030	0.883
0.5	0.610	0.609	31	37.242	1.166	81	91.310	0.994	131	137.913	0.882
1.0	1.219	0.610	32	38.408	1.162	82	92.304	0.991	132	138.795	0.880
1.5	1.829	0.610	33	39.570	1.159	83	93.295	0.988	133	139.675	0.878
2.0	2.439	0.610	34	40.729	1.157	84	94.283	0.985	134	140.553	0.877
2.5	3.049	0.609	35	41.886	1.153	85	95.268	0.983	135	141.430	0.876
3.0	3.658	0.609	36	43.039	1.150	86	96.251	0.980	136	142.306	0.875
3.5	4.267	0.610	37	44.189	1.147	87	97.231	0.976	137	143.181	0.874
4.0	4.877	0.609	38	45.336	1.143	88	98.207	0.973	138	144.055	0.872
4.5	5.486	0.609	39	46.479	1.140	89	99.180	0.971	139	144.927	0.871
5.0	6.095	0.609	40	47.619	1.136	90	100.151	0.968	140	145.798	0.870
5.5	6.704	0.609	41	48.755	1.132	91	101.119	0.965	141	146.668	0.869
6.0	7.313	0.608	42	49.887	1.130	92	102.084	0.962	142	147.537	0.868
6.5	7.921	0.609	43	51.017	1.126	93	103.046	0.960	143	148.405	0.866
7.0	8.530	0.608	44	52.143	1.122	94	104.006	0.957	144	149.271	0.865
7.5	9.138	0.608	45	53.265	1.118	95	104.963	0.954	145	150.136	0.865
8.0	9.746	0.608	46	54.383	1.115	96	105.917	0.952	146	151.001	0.863
8.5	10.354	0.608	47	55.498	1.113	97	106.869	0.950	147	151.864	0.863
9.0	10.962	0.607	48	56.611	1.108	98	107.819	0.946	148	152.727	0.861
9.5	11.569	0.607	49	57.719	1.104	99	108.765	0.944	149	153.588	0.861
10.0	12.176	0.606	50	58.823	1.101	100	109.709	0.941	150	154.449	0.860
10.5	12.782	0.606	51	59.924	1.098	101	110.650	0.939	151	155.309	0.859
11.0	13.388	0.606	52	61.022	1.094	102	111.589	0.937	152	156.168	0.858
11.5	13.994	0.606	53	62.116	1.090	103	112.526	0.934	153	157.026	0.857
12.0	14.600	0.605	54	63.206	1.086	104	113.460	0.932	154	157.883	0.857
12.5	15.205	0.605	55	64.292	1.083	105	114.392	0.930	155	158.740	0.856
13.0	15.810	0.605	56	65.375	1.079	106	115.322	0.928	156	159.596	0.855
13.5	16.415	0.604	57	66.454	1.076	107	116.250	0.925	157	160.451	0.855
14.0	17.019	0.604	58	67.530	1.072	108	117.175	0.923	158	161.306	0.854
14.5	17.623	0.603	59	68.602	1.069	109	118.098	0.921	159	162.160	0.853
15.0	18.226	0.603	60	69.671	1.064	110	119.019	0.918	160	163.013	0.853
15.5	18.829	0.602	61	70.735	1.061	111	119.937	0.916	161	163.866	0.852
16.0	19.431	0.602	62	71.796	1.058	112	120.853	0.914	162	164.718	0.852
16.5	20.033	0.602	63	72.854	1.054	113	121.767	0.913	163	165.570	0.851
17.0	20.635	0.601	64	73.908	1.051	114	122.680	0.911	164	166.421	0.851
17.5	21.236	0.601	65	74.959	1.048	115	123.591	0.908	165	167.272	0.851
18.0	21.837	0.600	66	76.007	1.044	116	124.499	0.906	166	168.123	0.850
18.5	22.437	0.599	67	77.051	1.040	117	125.405	0.905	167	168.973	0.850
19.0	23.036	0.599	68	78.091	1.036	118	126.310	0.903	168	169.823	0.849
19.5	23.635	0.598	69	79.127	1.034	119	127.213	0.901	169	170.672	0.849
20	24.233	1.195	70	80.161	1.030	120	128.114	0.899	170	171.521	0.849
21	25.428	1.193	71	81.191	1.027	121	129.013	0.897	171	172.370	0.848
22	26.621	1.191	72	82.218	1.023	122	129.910	0.896	172	173.218	0.849
23	27.812	1.189	73	83.241	1.020	123	130.806	0.894	173	174.067	0.848
24	29.001	1.186	74	84.261	1.017	124	131.700	0.892	174	174.915	0.848
25	30.187	1.183	75	85.278	1.013	125	132.592	0.891	175	175.763	0.847
26	31.370	1.180	76	86.291	1.010	126	133.483	0.889	176	176.610	0.848
27	32.550	1.177	77	87.301	1.007	127	134.372	0.888	177	177.458	0.847
28	33.727	1.175	78	88.308	1.004	128	135.260	0.886	178	178.305	0.848
29	34.902	1.172	79	89.312	1.000	129	136.146	0.884	179	179.153	0.847
30	36.074		80	90.312		130	137.030		180	180.000	
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ

$$E = M + e \sin E.$$

$e = 0.19$

M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	0.617	30	36.471	1.179	80	90.884	0.996	130	137.373	0.877
0.5	0.617	0.617	31	37.650	1.176	81	91.880	0.992	131	138.250	0.875
1.0	1.234	0.618	32	38.826	1.173	82	92.872	0.989	132	139.125	0.873
1.5	1.852	0.617	33	39.999	1.168	83	93.861	0.985	133	139.998	0.872
2.0	2.469	0.617	34	41.167	1.164	84	94.846	0.983	134	140.870	0.871
2.5	3.086	0.617	35	42.331	1.161	85	95.829	0.980	135	141.741	0.869
3.0	3.703	0.617	36	43.492	1.158	86	96.809	0.976	136	142.610	0.868
3.5	4.320	0.617	37	44.650	1.155	87	97.785	0.973	137	143.478	0.867
4.0	4.937	0.617	38	45.805	1.152	88	98.758	0.970	138	144.345	0.866
4.5	5.554	0.616	39	46.957	1.147	89	99.728	0.968	139	145.211	0.865
5.0	6.170	0.617	40	48.104	1.143	90	100.696	0.965	140	146.076	0.863
5.5	6.787	0.616	41	49.247	1.139	91	101.661	0.962	141	146.939	0.862
6.0	7.403	0.615	42	50.386	1.136	92	102.623	0.959	142	147.801	0.861
6.5	8.018	0.616	43	51.522	1.132	93	103.582	0.956	143	148.662	0.860
7.0	8.634	0.616	44	52.654	1.129	94	104.538	0.953	144	149.522	0.859
7.5	9.250	0.615	45	53.783	1.124	95	105.491	0.950	145	150.381	0.858
8.0	9.865	0.615	46	54.907	1.120	96	106.441	0.947	146	151.239	0.857
8.5	10.480	0.615	47	56.027	1.117	97	107.388	0.945	147	152.096	0.855
9.0	11.095	0.614	48	57.144	1.114	98	108.333	0.942	148	152.951	0.855
9.5	11.709	0.614	49	58.258	1.109	99	109.275	0.940	149	153.806	0.854
10.0	12.323	0.614	50	59.367	1.105	100	110.215	0.938	150	154.660	0.853
10.5	12.937	0.613	51	60.472	1.102	101	111.153	0.934	151	155.513	0.852
11.0	13.550	0.613	52	61.574	1.098	102	112.087	0.932	152	156.365	0.851
11.5	14.163	0.613	53	62.672	1.093	103	113.019	0.930	153	157.216	0.851
12.0	14.776	0.613	54	63.765	1.089	104	113.949	0.927	154	158.067	0.850
12.5	15.389	0.612	55	64.854	1.086	105	114.876	0.925	155	158.917	0.849
13.0	16.001	0.612	56	65.940	1.082	106	115.801	0.923	156	159.765	0.848
13.5	16.613	0.611	57	67.022	1.079	107	116.724	0.920	157	160.613	0.848
14.0	17.224	0.611	58	68.101	1.074	108	117.644	0.918	158	161.461	0.847
14.5	17.835	0.610	59	69.195	1.071	109	118.562	0.916	159	162.308	0.847
15.0	18.445	0.610	60	70.246	1.067	110	119.478	0.913	160	163.155	0.846
15.5	19.055	0.609	61	71.313	1.062	111	120.391	0.911	161	164.001	0.845
16.0	19.664	0.609	62	72.375	1.059	112	121.302	0.909	162	164.846	0.845
16.5	20.233	0.608	63	73.434	1.055	113	122.211	0.907	163	165.691	0.844
17.0	20.881	0.607	64	74.489	1.051	114	123.118	0.905	164	166.535	0.844
17.5	21.488	0.607	65	75.540	1.048	115	124.023	0.903	165	167.379	0.843
18.0	22.095	0.606	66	76.588	1.045	116	124.926	0.901	166	168.222	0.843
18.5	22.701	0.606	67	77.633	1.041	117	125.827	0.899	167	169.065	0.843
19.0	23.307	0.605	68	78.674	1.037	118	126.726	0.897	168	169.908	0.842
19.5	23.912	0.605	69	79.711	1.033	119	127.623	0.895	169	170.750	0.842
20	24.517	1.208	70	80.744	1.029	120	128.518	0.893	170	171.592	0.841
21	25.725	1.206	71	81.773	1.026	121	129.411	0.891	171	172.433	0.841
22	26.931	1.203	72	82.799	1.023	122	130.302	0.889	172	173.274	0.842
23	28.134	1.200	73	83.822	1.019	123	131.191	0.888	173	174.116	0.841
24	29.334	1.197	74	84.841	1.016	124	132.079	0.886	174	174.957	0.841
25	30.531	1.195	75	85.857	1.013	125	132.965	0.885	175	175.798	0.841
26	31.726	1.192	76	86.870	1.008	126	133.850	0.883	176	176.639	0.840
27	32.918	1.188	77	87.878	1.005	127	134.733	0.882	177	177.479	0.840
28	34.106	1.184	78	88.883	1.002	128	135.615	0.880	178	178.319	0.841
29	35.290	1.181	79	89.885	0.999	129	136.495	0.878	179	179.160	0.840
30	36.471		80	90.884		130	137.373		180	180.000	
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ

$$E = M + e \sin E.$$

$e = 0.20$											
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	0.625	30	36.877	1.188	80	91.456	0.993	130	137.711	0.870
0.5	0.625	0.625	31	38.065	1.185	81	92.449	0.990	131	138.581	0.869
1.0	1.250	0.625	32	39.250	1.181	82	93.439	0.986	132	139.450	0.867
1.5	1.875	0.625	33	40.431	1.178	83	94.425	0.983	133	140.317	0.866
2.0	2.500	0.625	34	41.609	1.174	84	95.408	0.980	134	141.183	0.864
2.5	3.125	0.624	35	42.783	1.170	85	96.388	0.977	135	142.047	0.863
3.0	3.749	0.625	36	43.953	1.166	86	97.365	0.973	136	142.910	0.862
3.5	4.374	0.624	37	45.119	1.163	87	98.338	0.970	137	143.772	0.861
4.0	4.998	0.625	38	46.282	1.159	88	99.308	0.967	138	144.633	0.859
4.5	5.623	0.624	39	47.441	1.154	89	100.275	0.964	139	145.492	0.858
5.0	6.247	0.623	40	48.595	1.151	90	101.239	0.961	140	146.350	0.856
5.5	6.871	0.624	41	49.746	1.146	91	102.200	0.958	141	147.206	0.856
6.0	7.495	0.623	42	50.892	1.142	92	103.158	0.955	142	148.062	0.855
6.5	8.118	0.623	43	52.034	1.138	93	104.113	0.952	143	148.917	0.853
7.0	8.741	0.624	44	53.172	1.135	94	105.065	0.949	144	149.770	0.852
7.5	9.365	0.623	45	54.307	1.130	95	106.014	0.947	145	150.622	0.851
8.0	9.988	0.622	46	55.437	1.125	96	106.961	0.943	146	151.473	0.850
8.5	10.610	0.622	47	56.562	1.122	97	107.904	0.941	147	152.323	0.849
9.0	11.232	0.622	48	57.684	1.118	98	108.845	0.938	148	153.172	0.848
9.5	11.854	0.621	49	58.802	1.113	99	109.783	0.935	149	154.020	0.847
10.0	12.475	0.621	50	59.915	1.110	100	110.718	0.933	150	154.867	0.846
10.5	13.096	0.621	51	61.025	1.106	101	111.651	0.930	151	155.713	0.846
11.0	13.717	0.620	52	62.131	1.101	102	112.581	0.927	152	156.559	0.844
11.5	14.337	0.620	53	63.232	1.096	103	113.508	0.925	153	157.403	0.844
12.0	14.957	0.620	54	64.328	1.093	104	114.433	0.922	154	158.247	0.843
12.5	15.577	0.619	55	65.421	1.088	105	115.355	0.920	155	159.090	0.842
13.0	16.196	0.619	56	66.509	1.085	106	116.275	0.918	156	159.932	0.841
13.5	16.815	0.618	57	67.594	1.081	107	117.193	0.915	157	160.773	0.841
14.0	17.433	0.618	58	68.675	1.077	108	118.108	0.913	158	161.614	0.840
14.5	18.051	0.617	59	69.752	1.072	109	119.021	0.910	159	162.454	0.840
15.0	18.668	0.616	60	70.824	1.068	110	119.931	0.908	160	163.294	0.839
15.5	19.284	0.616	61	71.892	1.064	111	120.839	0.906	161	164.133	0.838
16.0	19.900	0.616	62	72.956	1.060	112	121.745	0.904	162	164.971	0.838
16.5	20.516	0.615	63	74.016	1.056	113	122.649	0.901	163	165.809	0.837
17.0	21.131	0.614	64	75.072	1.052	114	123.550	0.899	164	166.646	0.837
17.5	21.745	0.614	65	76.124	1.049	115	124.449	0.897	165	167.483	0.837
18.0	22.359	0.613	66	77.173	1.044	116	125.346	0.895	166	168.320	0.836
18.5	22.972	0.612	67	78.217	1.041	117	126.241	0.893	167	169.156	0.836
19.0	23.584	0.612	68	79.258	1.037	118	127.134	0.892	168	169.992	0.835
19.5	24.196	0.611	69	80.295	1.033	119	128.026	0.890	169	170.827	0.835
20	24.807	1.221	70	81.328	1.029	120	128.916	0.888	170	171.662	0.834
21	26.028	1.218	71	82.357	1.026	121	129.804	0.885	171	172.496	0.834
22	27.246	1.215	72	83.383	1.022	122	130.689	0.883	172	173.330	0.835
23	28.461	1.212	73	84.405	1.018	123	131.572	0.882	173	174.165	0.834
24	29.673	1.209	74	85.423	1.014	124	132.454	0.880	174	174.999	0.834
25	30.882	1.206	75	86.437	1.011	125	133.334	0.879	175	175.833	0.834
26	32.088	1.202	76	87.448	1.007	126	134.213	0.877	176	176.667	0.833
27	33.290	1.199	77	88.455	1.004	127	135.090	0.875	177	177.500	0.833
28	34.489	1.196	78	89.459	1.000	128	135.965	0.874	178	178.333	0.834
29	35.685	1.192	79	90.459	0.997	129	136.839	0.872	179	179.167	0.833
30	36.877		80	91.456		130	137.711		180	180.000	
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ

$E = M + e \sin E.$

$e = 0.21$

M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	0.633	30	37.290	1.198	80	92.024	0.991	130	138.045	0.864
0.5	0.633	0.633	31	38.488	1.195	81	93.015	0.987	131	138.909	0.862
1.0	1.266	0.633	32	39.683	1.191	82	94.002	0.984	132	139.771	0.861
1.5	1.899	0.633	33	40.874	1.186	83	94.986	0.980	133	140.632	0.860
2.0	2.532	0.632	34	42.060	1.183	84	95.966	0.977	134	141.492	0.858
2.5	3.164	0.632	35	43.243	1.178	85	96.943	0.974	135	142.350	0.856
3.0	3.796	0.633	36	44.421	1.174	86	97.917	0.970	136	143.206	0.856
3.5	4.429	0.632	37	45.595	1.171	87	98.887	0.967	137	144.062	0.854
4.0	5.061	0.632	38	46.766	1.167	88	99.854	0.964	138	144.916	0.853
4.5	5.693	0.632	39	47.933	1.161	89	100.818	0.960	139	145.769	0.851
5.0	6.325	0.632	40	49.094	1.157	90	101.778	0.957	140	146.620	0.850
5.5	6.957	0.632	41	50.251	1.153	91	102.735	0.954	141	147.470	0.849
6.0	7.589	0.631	42	51.404	1.148	92	103.689	0.952	142	148.319	0.848
6.5	8.220	0.631	43	52.552	1.144	93	104.641	0.948	143	149.167	0.847
7.0	8.851	0.631	44	53.696	1.140	94	105.589	0.945	144	150.014	0.846
7.5	9.482	0.631	45	54.836	1.136	95	106.534	0.943	145	150.860	0.844
8.0	10.113	0.630	46	55.972	1.131	96	107.477	0.939	146	151.704	0.844
8.5	10.743	0.630	47	57.103	1.126	97	108.416	0.936	147	152.548	0.842
9.0	11.373	0.629	48	58.229	1.122	98	109.352	0.933	148	153.390	0.841
9.5	12.002	0.629	49	59.351	1.117	99	110.285	0.931	149	154.231	0.841
10.0	12.631	0.629	50	60.468	1.114	100	111.216	0.929	150	155.072	0.840
10.5	13.260	0.628	51	61.582	1.110	101	112.145	0.926	151	155.912	0.838
11.0	13.888	0.628	52	62.692	1.106	102	113.071	0.923	152	156.750	0.838
11.5	14.516	0.628	53	63.796	1.100	103	113.994	0.919	153	157.588	0.837
12.0	15.144	0.627	54	64.896	1.095	104	114.913	0.917	154	158.425	0.836
12.5	15.771	0.627	55	65.991	1.091	105	115.830	0.915	155	159.261	0.835
13.0	16.398	0.626	56	67.082	1.087	106	116.745	0.912	156	160.096	0.835
13.5	17.024	0.625	57	68.169	1.083	107	117.657	0.910	157	160.931	0.834
14.0	17.649	0.625	58	69.252	1.078	108	118.567	0.908	158	161.765	0.833
14.5	18.274	0.624	59	70.330	1.074	109	119.475	0.905	159	162.598	0.833
15.0	18.898	0.623	60	71.404	1.070	110	120.380	0.903	160	163.431	0.832
15.5	19.521	0.623	61	72.474	1.065	111	121.283	0.901	161	164.263	0.832
16.0	20.144	0.622	62	73.539	1.060	112	122.184	0.898	162	165.095	0.831
16.5	20.766	0.622	63	74.599	1.056	113	123.082	0.896	163	165.926	0.830
17.0	21.388	0.621	64	75.655	1.052	114	123.978	0.893	164	166.756	0.830
17.5	22.009	0.620	65	76.707	1.049	115	124.871	0.891	165	167.586	0.830
18.0	22.629	0.620	66	77.756	1.046	116	125.762	0.889	166	168.416	0.829
18.5	23.249	0.619	67	78.802	1.041	117	126.651	0.888	167	169.245	0.829
19.0	23.868	0.618	68	79.843	1.036	118	127.539	0.886	168	170.074	0.829
19.5	24.486	0.618	69	80.879	1.032	119	128.425	0.884	169	170.903	0.828
20	25.104	1.234	70	81.911	1.029	120	129.309	0.882	170	171.731	0.828
21	26.338	1.231	71	82.940	1.025	121	130.191	0.880	171	172.559	0.827
22	27.569	1.227	72	83.965	1.021	122	131.071	0.878	172	173.386	0.827
23	28.796	1.224	73	84.986	1.017	123	131.949	0.876	173	174.213	0.827
24	30.020	1.221	74	86.003	1.013	124	132.825	0.874	174	175.040	0.827
25	31.241	1.217	75	87.016	1.009	125	133.699	0.872	175	175.867	0.827
26	32.458	1.214	76	88.025	1.005	126	134.571	0.871	176	176.694	0.827
27	33.672	1.210	77	89.030	1.002	127	135.442	0.869	177	177.521	0.826
28	34.882	1.206	78	90.032	0.998	128	136.311	0.868	178	178.347	0.827
29	36.088	1.202	79	91.030	0.994	129	137.179	0.866	179	179.174	0.826
30	37.290		80	92.024		130	138.045		180	180.000	
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ

$$E = M + e \sin E.$$

$e = 0.22$

M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	0.641	30	37.711	1.208	80	92.592	0.988	130	138.374	0.858
0.5	0.641	0.641	31	38.919	1.204	81	93.580	0.985	131	139.232	0.856
1.0	1.282	0.641	32	40.123	1.202	82	94.565	0.980	132	140.088	0.855
1.5	1.923	0.641	33	41.323	1.196	83	95.545	0.977	133	140.943	0.853
2.0	2.564	0.641	34	42.519	1.191	84	96.522	0.974	134	141.796	0.852
2.5	3.205	0.640	35	43.710	1.187	85	97.496	0.971	135	142.648	0.850
3.0	3.845	0.641	36	44.897	1.182	86	98.467	0.967	136	143.498	0.849
3.5	4.486	0.640	37	46.079	1.178	87	99.434	0.963	137	144.347	0.848
4.0	5.126	0.640	38	47.257	1.174	88	100.397	0.960	138	145.195	0.847
4.5	5.766	0.640	39	48.431	1.168	89	101.357	0.957	139	146.042	0.845
5.0	6.406	0.640	40	49.599	1.164	90	102.314	0.954	140	146.887	0.844
5.5	7.046	0.640	41	50.763	1.159	91	103.268	0.950	141	147.731	0.843
6.0	7.686	0.639	42	51.922	1.155	92	104.218	0.947	142	148.574	0.841
6.5	8.325	0.639	43	53.077	1.150	93	105.165	0.944	143	149.415	0.840
7.0	8.964	0.639	44	54.227	1.146	94	106.109	0.941	144	150.255	0.839
7.5	9.603	0.638	45	55.373	1.140	95	107.050	0.938	145	151.094	0.838
8.0	10.241	0.638	46	56.513	1.135	96	107.988	0.935	146	151.932	0.837
8.5	10.879	0.638	47	57.648	1.131	97	108.923	0.932	147	152.769	0.836
9.0	11.517	0.637	48	58.779	1.127	98	109.855	0.929	148	153.605	0.835
9.5	12.154	0.637	49	59.906	1.121	99	110.784	0.926	149	154.440	0.834
10.0	12.791	0.636	50	61.027	1.117	100	111.710	0.924	150	155.274	0.832
10.5	13.427	0.636	51	62.144	1.113	101	112.634	0.921	151	156.106	0.832
11.0	14.063	0.635	52	63.257	1.107	102	113.555	0.918	152	156.938	0.831
11.5	14.698	0.635	53	64.364	1.102	103	114.473	0.915	153	157.769	0.830
12.0	15.333	0.635	54	65.466	1.098	104	115.388	0.912	154	158.599	0.830
12.5	15.968	0.634	55	66.564	1.094	105	116.300	0.910	155	159.429	0.829
13.0	16.602	0.633	56	67.658	1.090	106	117.210	0.907	156	160.258	0.828
13.5	17.235	0.633	57	68.748	1.085	107	118.117	0.905	157	161.086	0.827
14.0	17.868	0.632	58	69.833	1.079	108	119.022	0.903	158	161.913	0.827
14.5	18.500	0.632	59	70.912	1.075	109	119.925	0.900	159	162.740	0.826
15.0	19.132	0.631	60	71.987	1.071	110	120.825	0.897	160	163.566	0.826
15.5	19.763	0.630	61	73.058	1.066	111	121.722	0.895	161	164.392	0.825
16.0	20.393	0.629	62	74.124	1.061	112	122.617	0.893	162	165.217	0.824
16.5	21.022	0.629	63	75.185	1.057	113	123.510	0.891	163	166.041	0.824
17.0	21.651	0.628	64	76.242	1.052	114	124.401	0.888	164	166.865	0.823
17.5	22.279	0.627	65	77.294	1.049	115	125.289	0.886	165	167.688	0.823
18.0	22.906	0.626	66	78.343	1.045	116	126.175	0.884	166	168.511	0.823
18.5	23.532	0.626	67	79.388	1.041	117	127.059	0.882	167	169.334	0.822
19.0	24.158	0.625	68	80.429	1.036	118	127.941	0.880	168	170.156	0.821
19.5	24.783	0.625	69	81.465	1.031	119	128.821	0.878	169	170.977	0.821
20	25.408	1.247	70	82.496	1.027	120	129.699	0.876	170	171.798	0.821
21	26.655	1.243	71	83.523	1.024	121	130.575	0.874	171	172.619	0.821
22	27.898	1.240	72	84.547	1.020	122	131.449	0.872	172	173.440	0.821
23	29.138	1.236	73	85.567	1.015	123	132.321	0.870	173	174.261	0.820
24	30.374	1.233	74	86.582	1.011	124	133.191	0.868	174	175.081	0.820
25	31.607	1.229	75	87.593	1.007	125	134.059	0.866	175	175.901	0.820
26	32.836	1.225	76	88.600	1.004	126	134.925	0.865	176	176.721	0.820
27	34.061	1.220	77	89.604	1.000	127	135.790	0.863	177	177.541	0.819
28	35.281	1.217	78	90.604	0.996	128	136.653	0.861	178	178.360	0.820
29	36.498	1.213	79	91.600	0.992	129	137.514	0.860	179	179.180	0.820
30	37.711		80	92.592		130	138.374		180	180.000	
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ

$$E = M + e \sin E.$$

$e = 0.23$

M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	0.649	30	38.139	1.218	80	93.157	0.986	130	138.698	0.852
0.5	0.649	0.650	31	39.357	1.214	81	94.143	0.982	131	139.550	0.850
1.0	1.299	0.649	32	40.571	1.209	82	95.125	0.978	132	140.400	0.849
1.5	1.948	0.649	33	41.780	1.204	83	96.103	0.974	133	141.249	0.847
2.0	2.597	0.649	34	42.984	1.200	84	97.077	0.971	134	142.096	0.846
2.5	3.246	0.649	35	44.184	1.196	85	98.048	0.967	135	142.942	0.844
3.0	3.895	0.649	36	45.380	1.191	86	99.015	0.963	136	143.746	0.842
3.5	4.544	0.648	37	46.571	1.185	87	99.978	0.960	137	144.628	0.842
4.0	5.192	0.649	38	47.756	1.180	88	100.938	0.956	138	145.470	0.840
4.5	5.841	0.648	39	48.936	1.176	89	101.894	0.953	139	146.310	0.839
5.0	6.489	0.648	40	50.112	1.171	90	102.847	0.950	140	147.149	0.837
5.5	7.137	0.648	41	51.283	1.165	91	103.797	0.946	141	147.986	0.836
6.0	7.785	0.648	42	52.448	1.160	92	104.743	0.943	142	148.822	0.836
6.5	8.433	0.647	43	53.608	1.155	93	105.686	0.940	143	149.658	0.834
7.0	9.080	0.647	44	54.763	1.151	94	106.626	0.937	144	150.492	0.832
7.5	9.727	0.646	45	55.914	1.145	95	107.563	0.934	145	151.324	0.831
8.0	10.373	0.646	46	57.059	1.140	96	108.497	0.930	146	152.155	0.831
8.5	11.019	0.646	47	58.199	1.136	97	109.427	0.927	147	152.986	0.830
9.0	11.665	0.645	48	59.335	1.130	98	110.354	0.924	148	153.816	0.828
9.5	12.310	0.645	49	60.465	1.125	99	111.278	0.922	149	154.644	0.827
10.0	12.955	0.644	50	61.590	1.121	100	112.200	0.919	150	155.471	0.827
10.5	13.599	0.643	51	62.711	1.116	101	113.119	0.916	151	156.298	0.826
11.0	14.242	0.643	52	63.827	1.110	102	114.035	0.913	152	157.124	0.825
11.5	14.885	0.643	53	64.937	1.105	103	114.948	0.911	153	157.949	0.824
12.0	15.528	0.642	54	66.042	1.101	104	115.859	0.908	154	158.773	0.822
12.5	16.170	0.642	55	67.143	1.096	105	116.767	0.904	155	159.595	0.822
13.0	16.812	0.641	56	68.239	1.091	106	117.671	0.902	156	160.417	0.822
13.5	17.453	0.640	57	69.330	1.086	107	118.573	0.899	157	161.239	0.821
14.0	18.093	0.640	58	70.416	1.081	108	119.472	0.897	158	162.060	0.820
14.5	18.733	0.639	59	71.497	1.076	109	120.369	0.895	159	162.880	0.820
15.0	19.372	0.638	60	72.573	1.072	110	121.264	0.892	160	163.700	0.819
15.5	20.010	0.638	61	73.645	1.067	111	122.156	0.890	161	164.519	0.818
16.0	20.648	0.637	62	74.712	1.061	112	123.046	0.888	162	165.337	0.817
16.5	21.285	0.636	63	75.773	1.057	113	123.934	0.885	163	166.154	0.817
17.0	21.921	0.635	64	76.830	1.052	114	124.819	0.883	164	166.971	0.817
17.5	22.556	0.634	65	77.882	1.048	115	125.702	0.880	165	167.788	0.816
18.0	23.190	0.633	66	78.930	1.045	116	126.582	0.878	166	168.604	0.816
18.5	23.823	0.633	67	79.975	1.040	117	127.460	0.876	167	169.420	0.816
19.0	24.456	0.632	68	81.015	1.036	118	128.336	0.874	168	170.236	0.815
19.5	25.088	0.631	69	82.051	1.031	119	129.210	0.872	169	171.051	0.815
20	25.719	1.260	70	83.082	1.026	120	130.082	0.870	170	171.866	0.814
21	26.979	1.256	71	84.108	1.022	121	130.952	0.868	171	172.680	0.814
22	28.235	1.252	72	85.130	1.017	122	131.820	0.866	172	173.494	0.814
23	29.487	1.248	73	86.147	1.014	123	132.686	0.864	173	174.308	0.814
24	30.735	1.244	74	87.161	1.010	124	133.550	0.863	174	175.122	0.813
25	31.979	1.241	75	88.171	1.005	125	134.413	0.861	175	175.935	0.813
26	33.220	1.236	76	89.176	1.001	126	135.274	0.859	176	176.748	0.813
27	34.456	1.232	77	90.177	0.998	127	136.133	0.857	177	177.561	0.813
28	35.688	1.228	78	91.175	0.993	128	136.990	0.855	178	178.374	0.813
29	36.916	1.223	79	92.168	0.989	129	137.845	0.853	179	179.187	0.813
30	38.139		80	93.157		130	138.698		180	180.000	
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ

$$E = M + e \sin E.$$

$e = 0.24$

M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	0.658	30	38.575	1.228	80	93.721	0.983	130	139.018	0.846
0.5	0.658	0.658	31	39.803	1.223	81	94.704	0.979	131	139.864	0.844
1.0	1.316	0.658	32	41.026	1.219	82	95.683	0.975	132	140.708	0.843
1.5	1.974	0.657	33	42.245	1.213	83	96.658	0.971	133	141.551	0.841
2.0	2.631	0.658	34	43.458	1.209	84	97.629	0.967	134	142.392	0.839
2.5	3.289	0.657	35	44.667	1.203	85	98.596	0.964	135	143.231	0.838
3.0	3.946	0.657	36	45.870	1.198	86	99.560	0.960	136	144.069	0.837
3.5	4.603	0.658	37	47.068	1.193	87	100.520	0.956	137	144.906	0.835
4.0	5.261	0.657	38	48.261	1.188	88	101.476	0.952	138	145.741	0.834
4.5	5.918	0.656	39	49.449	1.182	89	102.428	0.949	139	146.575	0.832
5.0	6.574	0.657	40	50.631	1.177	90	103.377	0.946	140	147.407	0.831
5.5	7.231	0.656	41	51.808	1.171	91	104.323	0.942	141	148.238	0.830
6.0	7.887	0.656	42	52.979	1.166	92	105.265	0.939	142	149.068	0.829
6.5	8.543	0.655	43	54.145	1.161	93	106.204	0.936	143	149.897	0.827
7.0	9.198	0.655	44	55.306	1.156	94	107.140	0.933	144	150.724	0.827
7.5	9.853	0.655	45	56.462	1.150	95	108.073	0.929	145	151.551	0.825
8.0	10.508	0.654	46	57.612	1.144	96	109.002	0.925	146	152.376	0.824
8.5	11.162	0.654	47	58.756	1.140	97	109.927	0.922	147	153.200	0.823
9.0	11.816	0.653	48	59.896	1.134	98	110.849	0.920	148	154.023	0.822
9.5	12.469	0.653	49	61.030	1.129	99	111.769	0.917	149	154.845	0.821
10.0	13.122	0.652	50	62.159	1.124	100	112.686	0.914	150	155.666	0.820
10.5	13.774	0.652	51	63.283	1.118	101	113.600	0.912	151	156.486	0.820
11.0	14.426	0.651	52	64.401	1.113	102	114.512	0.908	152	157.306	0.818
11.5	15.077	0.651	53	65.514	1.108	103	115.420	0.905	153	158.124	0.817
12.0	15.728	0.650	54	66.622	1.103	104	116.325	0.902	154	158.941	0.817
12.5	16.378	0.649	55	67.725	1.097	105	117.227	0.899	155	159.758	0.816
13.0	17.027	0.648	56	68.822	1.093	106	118.126	0.897	156	160.574	0.815
13.5	17.675	0.648	57	69.915	1.087	107	119.023	0.895	157	161.389	0.814
14.0	18.323	0.647	58	71.002	1.082	108	119.918	0.892	158	162.203	0.814
14.5	18.970	0.647	59	72.084	1.077	109	120.810	0.889	159	163.017	0.813
15.0	19.617	0.646	60	73.161	1.073	110	121.699	0.887	160	163.830	0.812
15.5	20.263	0.645	61	74.234	1.067	111	122.586	0.884	161	164.642	0.812
16.0	20.908	0.644	62	75.301	1.062	112	123.470	0.882	162	165.454	0.811
16.5	21.552	0.643	63	76.363	1.056	113	124.352	0.880	163	166.265	0.811
17.0	22.195	0.642	64	77.419	1.052	114	125.232	0.878	164	167.076	0.810
17.5	22.837	0.641	65	78.471	1.049	115	126.110	0.875	165	167.886	0.810
18.0	23.478	0.641	66	79.520	1.044	116	126.985	0.873	166	168.696	0.810
18.5	24.119	0.640	67	80.564	1.039	117	127.858	0.870	167	169.506	0.809
19.0	24.759	0.639	68	81.603	1.034	118	128.728	0.868	168	170.315	0.808
19.5	25.398	0.638	69	82.637	1.030	119	129.596	0.866	169	171.123	0.808
20	26.036	1.273	70	83.667	1.025	120	130.462	0.864	170	171.931	0.808
21	27.309	1.269	71	84.692	1.020	121	131.326	0.862	171	172.739	0.808
22	28.578	1.265	72	85.712	1.016	122	132.188	0.860	172	173.547	0.807
23	29.843	1.261	73	86.728	1.012	123	133.048	0.858	173	174.354	0.807
24	31.104	1.257	74	87.740	1.007	124	133.906	0.857	174	175.161	0.807
25	32.361	1.252	75	88.747	1.004	125	134.763	0.855	175	175.968	0.807
26	33.613	1.247	76	89.751	0.999	126	135.618	0.853	176	176.775	0.806
27	34.860	1.243	77	90.750	0.994	127	136.471	0.851	177	177.581	0.807
28	36.103	1.238	78	91.744	0.991	128	137.322	0.849	178	178.388	0.806
29	37.341	1.234	79	92.735	0.986	129	138.171	0.847	179	179.194	0.806
30	38.575		80	93.721		130	139.018		180	180.000	
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ

$E = M + e \sin E.$

$e = 0.25$											
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	0.667	30	39.018	1.238	80	94.284	0.980	130	139.334	0.840
0.5	0.667	0.666	31	40.256	1.233	81	95.264	0.975	131	140.174	0.838
1.0	1.333	0.667	32	41.489	1.228	82	96.239	0.971	132	141.012	0.837
1.5	2.000	0.666	33	42.717	1.222	83	97.210	0.968	133	141.849	0.835
2.0	2.666	0.667	34	43.939	1.217	84	98.178	0.964	134	142.684	0.833
2.5	3.333	0.666	35	45.156	1.211	85	99.142	0.960	135	143.517	0.832
3.0	3.999	0.666	36	46.367	1.206	86	100.102	0.956	136	144.349	0.830
3.5	4.665	0.665	37	47.573	1.200	87	101.058	0.952	137	145.179	0.829
4.0	5.330	0.666	38	48.773	1.195	88	102.010	0.949	138	146.008	0.828
4.5	5.996	0.666	39	49.968	1.189	89	102.959	0.945	139	146.836	0.826
5.0	6.662	0.665	40	51.157	1.183	90	103.904	0.941	140	147.662	0.825
5.5	7.327	0.664	41	52.340	1.177	91	104.845	0.938	141	148.487	0.824
6.0	7.991	0.665	42	53.517	1.172	92	105.783	0.935	142	149.311	0.822
6.5	8.656	0.664	43	54.689	1.166	93	106.718	0.932	143	150.133	0.821
7.0	9.320	0.663	44	55.855	1.160	94	107.650	0.928	144	150.954	0.820
7.5	9.983	0.663	45	57.015	1.155	95	108.578	0.924	145	151.774	0.819
8.0	10.646	0.663	46	58.170	1.149	96	109.502	0.921	146	152.593	0.818
8.5	11.309	0.662	47	59.319	1.143	97	110.423	0.918	147	153.411	0.817
9.0	11.971	0.662	48	60.462	1.138	98	111.341	0.915	148	154.228	0.816
9.5	12.633	0.661	49	61.600	1.132	99	112.256	0.912	149	155.044	0.815
10.0	13.294	0.660	50	62.732	1.127	100	113.168	0.910	150	155.859	0.813
10.5	13.954	0.660	51	63.859	1.121	101	114.078	0.906	151	156.672	0.813
11.0	14.614	0.659	52	64.980	1.115	102	114.984	0.903	152	157.485	0.812
11.5	15.273	0.659	53	66.095	1.110	103	115.887	0.900	153	158.297	0.811
12.0	15.932	0.658	54	67.205	1.105	104	116.787	0.897	154	159.108	0.810
12.5	16.590	0.657	55	68.310	1.099	105	117.684	0.894	155	159.918	0.810
13.0	17.247	0.656	56	69.409	1.094	106	118.578	0.892	156	160.728	0.809
13.5	17.903	0.656	57	70.503	1.088	107	119.470	0.889	157	161.537	0.808
14.0	18.559	0.655	58	71.591	1.083	108	120.359	0.887	158	162.345	0.807
14.5	19.214	0.654	59	72.674	1.078	109	121.246	0.884	159	163.152	0.807
15.0	19.868	0.653	60	73.752	1.073	110	122.130	0.881	160	163.959	0.806
15.5	20.521	0.652	61	74.825	1.067	111	123.011	0.879	161	164.765	0.805
16.0	21.173	0.652	62	75.892	1.062	112	123.890	0.877	162	165.570	0.805
16.5	21.825	0.651	63	76.954	1.056	113	124.767	0.874	163	166.375	0.804
17.0	22.476	0.650	64	78.010	1.052	114	125.641	0.872	164	167.179	0.804
17.5	23.126	0.649	65	79.062	1.048	115	126.513	0.869	165	167.983	0.803
18.0	23.775	0.647	66	80.110	1.043	116	127.382	0.867	166	168.786	0.803
18.5	24.422	0.647	67	81.153	1.038	117	128.249	0.865	167	169.589	0.803
19.0	25.069	0.646	68	82.191	1.033	118	129.114	0.863	168	170.392	0.802
19.5	25.715	0.645	69	83.224	1.028	119	129.977	0.861	169	171.194	0.801
20	26.360	1.287	70	84.252	1.023	120	130.838	0.858	170	171.995	0.802
21	27.647	1.282	71	85.275	1.019	121	131.696	0.856	171	172.797	0.801
22	28.929	1.278	72	86.294	1.014	122	132.552	0.854	172	173.598	0.801
23	30.207	1.273	73	87.308	1.010	123	133.406	0.852	173	174.399	0.800
24	31.480	1.268	74	88.318	1.005	124	134.258	0.851	174	175.199	0.801
25	32.748	1.264	75	89.323	1.001	125	135.109	0.849	175	176.000	0.800
26	34.012	1.259	76	90.324	0.996	126	135.958	0.847	176	176.800	0.800
27	35.271	1.254	77	91.320	0.992	127	136.805	0.845	177	177.600	0.800
28	36.525	1.249	78	92.312	0.988	128	137.650	0.843	178	178.400	0.800
29	37.774	1.244	79	93.300	0.984	129	138.493	0.841	179	179.200	0.800
30	39.018		80	94.284		130	139.334		180	180.000	
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ

$E = M + e \sin E.$

$e = 0.26$

M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	0.676	30	39.470	1.248	80	94.843	0.977	130	139.646	0.834
0.5	0.676	0.676	31	40.718	1.242	81	95.820	0.972	131	140.480	0.832
1.0	1.352	0.675	32	41.960	1.237	82	96.792	0.968	132	141.312	0.831
1.5	2.027	0.675	33	43.197	1.231	83	97.760	0.964	133	142.143	0.829
2.0	2.702	0.676	34	44.428	1.225	84	98.724	0.960	134	142.972	0.827
2.5	3.378	0.675	35	45.653	1.219	85	99.684	0.956	135	143.799	0.826
3.0	4.053	0.675	36	46.872	1.214	86	100.640	0.953	136	144.625	0.824
3.5	4.728	0.675	37	48.086	1.207	87	101.593	0.948	137	145.449	0.823
4.0	5.403	0.674	38	49.293	1.201	88	102.541	0.945	138	146.272	0.821
4.5	6.077	0.674	39	50.494	1.195	89	103.486	0.941	139	147.093	0.820
5.0	6.751	0.674	40	51.689	1.189	90	104.427	0.937	140	147.913	0.819
5.5	7.425	0.674	41	52.878	1.183	91	105.364	0.933	141	148.732	0.818
6.0	8.099	0.673	42	54.061	1.177	92	106.297	0.930	142	149.550	0.816
6.5	8.772	0.672	43	55.238	1.171	93	107.227	0.927	143	150.366	0.815
7.0	9.444	0.673	44	56.409	1.165	94	108.154	0.924	144	151.181	0.814
7.5	10.117	0.672	45	57.574	1.159	95	109.078	0.921	145	151.995	0.813
8.0	10.789	0.671	46	58.733	1.153	96	109.999	0.916	146	152.808	0.812
8.5	11.460	0.671	47	59.886	1.147	97	110.915	0.913	147	153.620	0.810
9.0	12.131	0.670	48	61.033	1.141	98	111.828	0.910	148	154.430	0.810
9.5	12.801	0.670	49	62.174	1.135	99	112.738	0.907	149	155.240	0.808
10.0	13.471	0.669	50	63.309	1.130	100	113.645	0.904	150	156.048	0.807
10.5	14.140	0.668	51	64.439	1.123	101	114.549	0.901	151	156.855	0.807
11.0	14.808	0.667	52	65.562	1.117	102	115.450	0.899	152	157.662	0.806
11.5	15.475	0.667	53	66.679	1.112	103	116.349	0.895	153	158.468	0.804
12.0	16.142	0.666	54	67.791	1.107	104	117.244	0.892	154	159.272	0.804
12.5	16.808	0.666	55	68.898	1.100	105	118.136	0.889	155	160.076	0.803
13.0	17.474	0.664	56	69.998	1.095	106	119.025	0.887	156	160.879	0.803
13.5	18.138	0.664	57	71.093	1.089	107	119.912	0.884	157	161.682	0.802
14.0	18.802	0.662	58	72.182	1.083	108	120.796	0.881	158	162.484	0.801
14.5	19.464	0.662	59	73.265	1.078	109	121.677	0.879	159	163.285	0.800
15.0	20.126	0.661	60	74.343	1.073	110	122.556	0.876	160	164.085	0.800
15.5	20.787	0.660	61	75.416	1.068	111	123.432	0.873	161	164.885	0.799
16.0	21.447	0.659	62	76.484	1.062	112	124.305	0.871	162	165.684	0.798
16.5	22.106	0.659	63	77.546	1.057	113	125.176	0.869	163	166.482	0.798
17.0	22.765	0.657	64	78.603	1.052	114	126.045	0.866	164	167.280	0.798
17.5	23.422	0.657	65	79.655	1.046	115	126.911	0.864	165	168.078	0.797
18.0	24.079	0.655	66	80.701	1.041	116	127.775	0.862	166	168.875	0.797
18.5	24.734	0.654	67	81.742	1.037	117	128.637	0.859	167	169.672	0.796
19.0	25.388	0.652	68	82.779	1.031	118	129.496	0.857	168	170.468	0.795
19.5	26.040	0.652	69	83.810	1.026	119	130.353	0.855	169	171.263	0.795
20	26.692	1.300	70	84.836	1.021	120	131.208	0.853	170	172.058	0.796
21	27.992	1.296	71	85.857	1.017	121	132.061	0.850	171	172.854	0.795
22	29.288	1.291	72	86.874	1.012	122	132.911	0.848	172	173.649	0.794
23	30.579	1.286	73	87.886	1.008	123	133.759	0.846	173	174.443	0.794
24	31.865	1.280	74	88.894	1.003	124	134.605	0.845	174	175.237	0.795
25	33.145	1.275	75	89.897	0.998	125	135.450	0.843	175	176.032	0.794
26	34.420	1.271	76	90.895	0.993	126	136.293	0.841	176	176.826	0.793
27	35.691	1.265	77	91.888	0.989	127	137.134	0.839	177	177.619	0.794
28	36.956	1.260	78	92.877	0.985	128	137.973	0.837	178	178.413	0.793
29	38.216	1.254	79	93.862	0.981	129	138.810	0.836	179	179.206	0.794
30	39.470		80	94.843		130	139.646		180	180.000	
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ

$E = M + e \sin E.$

$e = 0.27$											
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	0.685	30	39.930	1.258	80	95.400	0.974	130	139.954	0.828
0.5	0.685	0.685	31	41.188	1.251	81	96.374	0.968	131	140.782	0.826
1.0	1.370	0.685	32	42.439	1.246	82	97.342	0.964	132	141.608	0.825
1.5	2.055	0.685	33	43.685	1.240	83	98.306	0.961	133	142.433	0.823
2.0	2.739	0.685	34	44.925	1.233	84	99.267	0.957	134	143.256	0.821
2.5	3.424	0.684	35	46.158	1.226	85	100.224	0.952	135	144.077	0.820
3.0	4.108	0.685	36	47.384	1.221	86	101.176	0.948	136	144.897	0.818
3.5	4.793	0.684	37	48.605	1.214	87	102.124	0.944	137	145.715	0.817
4.0	5.477	0.683	38	49.819	1.208	88	103.068	0.941	138	146.532	0.815
4.5	6.160	0.683	39	51.027	1.201	89	104.009	0.937	139	147.347	0.814
5.0	6.843	0.683	40	52.228	1.195	90	104.946	0.933	140	148.161	0.813
5.5	7.526	0.683	41	53.423	1.189	91	105.879	0.929	141	148.974	0.811
6.0	8.209	0.682	42	54.612	1.182	92	106.808	0.926	142	149.785	0.810
6.5	8.891	0.681	43	55.794	1.176	93	107.734	0.923	143	150.595	0.809
7.0	9.572	0.682	44	56.970	1.169	94	108.657	0.919	144	151.404	0.808
7.5	10.254	0.681	45	58.139	1.163	95	109.576	0.915	145	152.212	0.807
8.0	10.935	0.680	46	59.302	1.157	96	110.491	0.911	146	153.019	0.806
8.5	11.615	0.679	47	60.459	1.150	97	111.402	0.909	147	153.825	0.804
9.0	12.294	0.679	48	61.609	1.144	98	112.311	0.906	148	154.629	0.803
9.5	12.973	0.678	49	62.753	1.138	99	113.217	0.902	149	155.432	0.802
10.0	13.651	0.678	50	63.891	1.131	100	114.119	0.899	150	156.234	0.801
10.5	14.329	0.677	51	65.022	1.126	101	115.018	0.896	151	157.035	0.801
11.0	15.006	0.676	52	66.148	1.119	102	115.914	0.893	152	157.836	0.800
11.5	15.682	0.675	53	67.267	1.114	103	116.807	0.890	153	158.636	0.799
12.0	16.357	0.674	54	68.381	1.108	104	117.697	0.887	154	159.435	0.798
12.5	17.031	0.674	55	69.489	1.101	105	118.584	0.884	155	160.233	0.797
13.0	17.705	0.673	56	70.590	1.096	106	119.468	0.881	156	161.030	0.796
13.5	18.378	0.672	57	71.686	1.089	107	120.349	0.879	157	161.826	0.795
14.0	19.050	0.671	58	72.775	1.084	108	121.228	0.876	158	162.621	0.795
14.5	19.721	0.670	59	73.859	1.079	109	122.104	0.873	159	163.416	0.794
15.0	20.391	0.669	60	74.938	1.073	110	122.977	0.870	160	164.210	0.794
15.5	21.060	0.668	61	76.011	1.067	111	123.847	0.868	161	165.004	0.793
16.0	21.728	0.667	62	77.078	1.062	112	124.715	0.866	162	165.797	0.792
16.5	22.395	0.665	63	78.140	1.056	113	125.581	0.863	163	166.589	0.792
17.0	23.060	0.665	64	79.196	1.050	114	126.444	0.861	164	167.381	0.791
17.5	23.725	0.663	65	80.246	1.045	115	127.305	0.859	165	168.172	0.791
18.0	24.388	0.662	66	81.291	1.040	116	128.164	0.856	166	168.963	0.790
18.5	25.050	0.662	67	82.331	1.035	117	129.020	0.853	167	169.753	0.790
19.0	25.712	0.660	68	83.366	1.030	118	129.873	0.851	168	170.543	0.789
19.5	26.372	0.660	69	84.396	1.025	119	130.724	0.849	169	171.332	0.789
20	27.032	1.314	70	85.421	1.019	120	131.573	0.847	170	172.121	0.789
21	28.346	1.309	71	86.440	1.014	121	132.420	0.845	171	172.910	0.789
22	29.655	1.304	72	87.454	1.010	122	133.265	0.843	172	173.699	0.788
23	30.959	1.298	73	88.464	1.005	123	134.108	0.841	173	174.487	0.788
24	32.257	1.293	74	89.469	1.000	124	134.949	0.839	174	175.275	0.788
25	33.550	1.287	75	90.469	0.995	125	135.788	0.837	175	176.063	0.788
26	34.837	1.282	76	91.464	0.991	126	136.625	0.834	176	176.851	0.787
27	36.119	1.276	77	92.455	0.986	127	137.459	0.833	177	177.638	0.788
28	37.395	1.270	78	93.441	0.982	128	138.292	0.832	178	178.426	0.787
29	38.665	1.265	79	94.423	0.977	129	139.124	0.830	179	179.213	0.787
30	39.930		80	95.400		130	139.954		180	180.000	
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ

$$E = M + e \sin E.$$

$e = 0.28$

M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	0.695	30	40.396	1.269	80	95.955	0.970	130	140.258	0.821
0.5	0.695	0.695	31	41.665	1.262	81	96.925	0.965	131	141.079	0.820
1.0	1.390	0.694	32	42.927	1.254	82	97.890	0.961	132	141.899	0.819
1.5	2.084	0.693	33	44.181	1.248	83	98.851	0.957	133	142.718	0.817
2.0	2.777	0.694	34	45.429	1.241	84	99.808	0.952	134	143.535	0.816
2.5	3.471	0.694	35	46.670	1.234	85	100.760	0.948	135	144.351	0.814
3.0	4.165	0.694	36	47.904	1.228	86	101.708	0.944	136	145.165	0.812
3.5	4.859	0.693	37	49.132	1.221	87	102.652	0.941	137	145.977	0.811
4.0	5.552	0.693	38	50.353	1.214	88	103.593	0.936	138	146.788	0.810
4.5	6.245	0.693	39	51.567	1.207	89	104.529	0.933	139	147.598	0.808
5.0	6.938	0.692	40	52.774	1.201	90	105.462	0.928	140	148.406	0.807
5.5	7.630	0.692	41	53.975	1.194	91	106.390	0.925	141	149.213	0.805
6.0	8.322	0.691	42	55.169	1.187	92	107.315	0.922	142	150.018	0.804
6.5	9.013	0.691	43	56.356	1.180	93	108.237	0.918	143	150.822	0.802
7.0	9.704	0.690	44	57.536	1.173	94	109.155	0.914	144	151.624	0.802
7.5	10.394	0.690	45	58.709	1.167	95	110.069	0.910	145	152.426	0.801
8.0	11.084	0.689	46	59.876	1.160	96	110.979	0.907	146	153.227	0.799
8.5	11.773	0.689	47	61.036	1.153	97	111.886	0.904	147	154.026	0.798
9.0	12.462	0.688	48	62.189	1.147	98	112.790	0.901	148	154.824	0.797
9.5	13.140	0.687	49	63.336	1.141	99	113.691	0.897	149	155.621	0.797
10.0	13.837	0.686	50	64.477	1.133	100	114.588	0.894	150	156.418	0.796
10.5	14.523	0.685	51	65.610	1.128	101	115.482	0.891	151	157.214	0.794
11.0	15.208	0.685	52	66.738	1.121	102	116.373	0.888	152	158.008	0.793
11.5	15.893	0.684	53	67.859	1.115	103	117.261	0.885	153	158.801	0.793
12.0	16.577	0.683	54	68.974	1.109	104	118.146	0.882	154	159.594	0.792
12.5	17.260	0.682	55	70.083	1.102	105	119.028	0.879	155	160.386	0.791
13.0	17.942	0.681	56	71.185	1.096	106	119.907	0.876	156	161.177	0.790
13.5	18.623	0.680	57	72.281	1.090	107	120.783	0.873	157	161.967	0.789
14.0	19.303	0.680	58	73.371	1.084	108	121.656	0.870	158	162.756	0.789
14.5	19.983	0.678	59	74.455	1.079	109	122.526	0.868	159	163.545	0.788
15.0	20.661	0.677	60	75.534	1.072	110	123.394	0.865	160	164.333	0.787
15.5	21.338	0.676	61	76.606	1.066	111	124.259	0.863	161	165.120	0.787
16.0	22.014	0.674	62	77.672	1.061	112	125.122	0.860	162	165.907	0.786
16.5	22.688	0.673	63	78.733	1.056	113	125.982	0.857	163	166.693	0.786
17.0	23.361	0.673	64	79.789	1.049	114	126.839	0.855	164	167.479	0.785
17.5	24.034	0.671	65	80.838	1.044	115	127.694	0.853	165	168.264	0.784
18.0	24.705	0.671	66	81.882	1.039	116	128.547	0.851	166	169.048	0.784
18.5	25.376	0.669	67	82.921	1.033	117	129.398	0.848	167	169.832	0.784
19.0	26.045	0.667	68	83.954	1.027	118	130.246	0.846	168	170.616	0.783
19.5	26.712	0.666	69	84.981	1.023	119	131.092	0.843	169	171.399	0.783
20	27.378	1.329	70	86.004	1.017	120	131.935	0.841	170	172.182	0.783
21	28.707	1.323	71	87.021	1.012	121	132.776	0.839	171	172.965	0.783
22	30.030	1.317	72	88.033	1.007	122	133.615	0.837	172	173.748	0.782
23	31.347	1.311	73	89.040	1.003	123	134.452	0.835	173	174.530	0.782
24	32.658	1.305	74	90.043	0.997	124	135.287	0.833	174	175.312	0.782
25	33.963	1.299	75	91.040	0.992	125	136.120	0.831	175	176.094	0.781
26	35.262	1.293	76	92.032	0.988	126	136.951	0.829	176	176.875	0.781
27	36.555	1.287	77	93.020	0.983	127	137.780	0.828	177	177.656	0.782
28	37.842	1.280	78	94.003	0.978	128	138.608	0.826	178	178.438	0.781
29	39.122	1.274	79	94.981	0.974	129	139.434	0.824	179	179.219	0.781
30	40.396		80	95.955		130	140.258		180	180.000	
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ

$$E = M + e \sin E.$$

$e = 0.29$

M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	0.704	30	40.873	1.278	80	96.508	0.966	130	140.557	0.816
0.5	0.704	0.705	31	42.151	1.270	81	97.474	0.961	131	141.373	0.814
1.0	1.409	0.704	32	43.421	1.264	82	98.435	0.957	132	142.187	0.813
1.5	2.113	0.703	33	44.685	1.256	83	99.392	0.953	133	143.000	0.811
2.0	2.816	0.704	34	45.941	1.249	84	100.345	0.949	134	143.811	0.810
2.5	3.520	0.704	35	47.190	1.242	85	101.294	0.944	135	144.621	0.808
3.0	4.224	0.703	36	48.432	1.235	86	102.238	0.939	136	145.429	0.806
3.5	4.927	0.703	37	49.667	1.227	87	103.177	0.936	137	146.235	0.805
4.0	5.630	0.703	38	50.894	1.220	88	104.113	0.933	138	147.040	0.804
4.5	6.333	0.702	39	52.114	1.213	89	105.046	0.929	139	147.844	0.802
5.0	7.035	0.702	40	53.327	1.205	90	105.975	0.924	140	148.646	0.801
5.5	7.737	0.701	41	54.532	1.199	91	106.899	0.920	141	149.447	0.799
6.0	8.438	0.701	42	55.731	1.192	92	107.819	0.916	142	150.246	0.798
6.5	9.139	0.700	43	56.923	1.185	93	108.735	0.913	143	151.044	0.797
7.0	9.839	0.700	44	58.108	1.177	94	109.648	0.909	144	151.841	0.796
7.5	10.539	0.699	45	59.285	1.170	95	110.557	0.907	145	152.637	0.795
8.0	11.238	0.698	46	60.455	1.163	96	111.464	0.902	146	153.432	0.793
8.5	11.936	0.698	47	61.618	1.157	97	112.366	0.899	147	154.225	0.792
9.0	12.634	0.697	48	62.775	1.149	98	113.265	0.896	148	155.017	0.792
9.5	13.331	0.696	49	63.924	1.143	99	114.161	0.892	149	155.809	0.790
10.0	14.027	0.696	50	65.067	1.136	100	115.053	0.889	150	156.599	0.790
10.5	14.723	0.695	51	66.203	1.129	101	115.942	0.885	151	157.389	0.788
11.0	15.418	0.693	52	67.332	1.122	102	116.827	0.883	152	158.177	0.787
11.5	16.111	0.693	53	68.454	1.116	103	117.710	0.880	153	158.964	0.787
12.0	16.804	0.691	54	69.570	1.110	104	118.590	0.876	154	159.751	0.786
12.5	17.495	0.691	55	70.680	1.103	105	119.466	0.874	155	160.537	0.784
13.0	18.186	0.690	56	71.783	1.096	106	120.340	0.871	156	161.321	0.784
13.5	18.876	0.688	57	72.879	1.090	107	121.211	0.868	157	162.105	0.784
14.0	19.564	0.688	58	73.969	1.084	108	122.079	0.865	158	162.889	0.783
14.5	20.252	0.686	59	75.053	1.078	109	122.944	0.862	159	163.672	0.782
15.0	20.938	0.685	60	76.131	1.072	110	123.806	0.860	160	164.454	0.781
15.5	21.623	0.684	61	77.203	1.066	111	124.666	0.857	161	165.235	0.781
16.0	22.307	0.683	62	78.269	1.059	112	125.523	0.854	162	166.016	0.780
16.5	22.990	0.682	63	79.328	1.054	113	126.377	0.852	163	166.796	0.779
17.0	23.672	0.680	64	80.382	1.048	114	127.229	0.850	164	167.575	0.779
17.5	24.352	0.679	65	81.430	1.043	115	128.079	0.848	165	168.354	0.779
18.0	25.031	0.678	66	82.473	1.036	116	128.927	0.845	166	169.133	0.778
18.5	25.709	0.676	67	83.509	1.031	117	129.772	0.842	167	169.911	0.778
19.0	26.385	0.675	68	84.540	1.026	118	130.614	0.840	168	170.689	0.777
19.5	27.060	0.673	69	85.566	1.020	119	131.454	0.838	169	171.466	0.777
20	27.733	1.342	70	86.586	1.015	120	132.292	0.836	170	172.243	0.777
21	29.075	1.337	71	87.601	1.010	121	133.128	0.833	171	173.020	0.776
22	30.412	1.330	72	88.611	1.005	122	133.961	0.831	172	173.796	0.776
23	31.742	1.324	73	89.616	0.999	123	134.792	0.829	173	174.572	0.776
24	33.066	1.318	74	90.615	0.994	124	135.621	0.827	174	175.348	0.775
25	34.384	1.311	75	91.609	0.989	125	136.448	0.825	175	176.123	0.776
26	35.695	1.304	76	92.598	0.985	126	137.273	0.824	176	176.899	0.775
27	36.999	1.298	77	93.583	0.979	127	138.097	0.822	177	177.674	0.775
28	38.297	1.291	78	94.562	0.975	128	138.919	0.820	178	178.449	0.776
29	39.588	1.285	79	95.537	0.971	129	139.739	0.818	179	179.225	0.775
30	40.873		80	96.508		130	140.557		180	180.000	
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ

$$E = M + e \sin E.$$

$e = 0.30$

M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	0.714	30	41.358	1.287	80	97.058	0.962	130	140.852	0.810
0.5	0.714	0.715	31	42.645	1.279	81	98.020	0.958	131	141.662	0.809
1.0	1.429	0.714	32	43.924	1.272	82	98.978	0.953	132	142.471	0.807
1.5	2.143	0.714	33	45.196	1.265	83	99.931	0.949	133	143.278	0.805
2.0	2.857	0.713	34	46.461	1.256	84	100.880	0.944	134	144.083	0.804
2.5	3.570	0.714	35	47.717	1.249	85	101.824	0.939	135	144.887	0.802
3.0	4.284	0.713	36	48.966	1.242	86	102.763	0.936	136	145.689	0.801
3.5	4.997	0.713	37	50.208	1.234	87	103.699	0.932	137	146.490	0.799
4.0	5.710	0.713	38	51.442	1.225	88	104.631	0.928	138	147.289	0.798
4.5	6.423	0.712	39	52.667	1.218	89	105.559	0.923	139	148.087	0.796
5.0	7.135	0.712	40	53.885	1.212	90	106.482	0.920	140	148.883	0.795
5.5	7.847	0.711	41	55.097	1.204	91	107.402	0.916	141	149.678	0.794
6.0	8.558	0.710	42	56.301	1.196	92	108.318	0.912	142	150.472	0.792
6.5	9.268	0.710	43	57.497	1.188	93	109.230	0.908	143	151.264	0.791
7.0	9.978	0.709	44	58.685	1.181	94	110.138	0.904	144	152.055	0.790
7.5	10.687	0.709	45	59.866	1.174	95	111.042	0.901	145	152.845	0.789
8.0	11.396	0.708	46	61.040	1.166	96	111.943	0.898	146	153.634	0.787
8.5	12.104	0.707	47	62.206	1.159	97	112.841	0.894	147	154.421	0.786
9.0	12.811	0.707	48	63.365	1.152	98	113.735	0.891	148	155.207	0.786
9.5	13.518	0.705	49	64.517	1.144	99	114.626	0.887	149	155.993	0.785
10.0	14.223	0.705	50	65.661	1.137	100	115.513	0.884	150	156.778	0.783
10.5	14.928	0.704	51	66.798	1.130	101	116.397	0.881	151	157.561	0.782
11.0	15.632	0.703	52	67.928	1.124	102	117.278	0.877	152	158.343	0.782
11.5	16.335	0.701	53	69.052	1.117	103	118.155	0.874	153	159.125	0.781
12.0	17.036	0.701	54	70.169	1.110	104	119.029	0.871	154	159.906	0.780
12.5	17.737	0.699	55	71.279	1.104	105	119.900	0.868	155	160.686	0.778
13.0	18.436	0.699	56	72.383	1.096	106	120.768	0.866	156	161.464	0.778
13.5	19.135	0.697	57	73.479	1.090	107	121.634	0.863	157	162.242	0.777
14.0	19.832	0.696	58	74.569	1.084	108	122.497	0.860	158	163.019	0.777
14.5	20.528	0.694	59	75.653	1.077	109	123.357	0.857	159	163.796	0.776
15.0	21.222	0.693	60	76.730	1.071	110	124.214	0.854	160	164.572	0.776
15.5	21.915	0.692	61	77.801	1.065	111	125.068	0.852	161	165.348	0.775
16.0	22.607	0.691	62	78.866	1.058	112	125.920	0.849	162	166.123	0.774
16.5	23.298	0.690	63	79.924	1.053	113	126.769	0.846	163	166.897	0.773
17.0	23.988	0.688	64	80.977	1.046	114	127.615	0.844	164	167.670	0.773
17.5	24.676	0.687	65	82.023	1.040	115	128.459	0.842	165	168.443	0.773
18.0	25.363	0.685	66	83.063	1.034	116	129.301	0.840	166	169.216	0.772
18.5	26.048	0.684	67	84.097	1.029	117	130.141	0.837	167	169.988	0.772
19.0	26.732	0.682	68	85.126	1.024	118	130.978	0.834	168	170.760	0.771
19.5	27.414	0.681	69	86.150	1.018	119	131.812	0.832	169	171.531	0.771
20	28.095	1.357	70	87.168	1.013	120	132.644	0.830	170	172.302	0.771
21	29.452	1.350	71	88.181	1.007	121	133.474	0.828	171	173.073	0.771
22	30.802	1.344	72	89.188	1.002	122	134.302	0.826	172	173.844	0.770
23	32.146	1.337	73	90.190	0.996	123	135.128	0.823	173	174.614	0.770
24	33.483	1.330	74	91.186	0.991	124	135.951	0.821	174	175.384	0.769
25	34.813	1.323	75	92.177	0.986	125	136.772	0.820	175	176.153	0.770
26	36.136	1.316	76	93.163	0.981	126	137.592	0.818	176	176.923	0.769
27	37.452	1.308	77	94.144	0.976	127	138.410	0.816	177	177.692	0.769
28	38.760	1.302	78	95.120	0.971	128	139.226	0.814	178	178.461	0.770
29	40.062	1.296	79	96.091	0.967	129	140.040	0.812	179	179.231	0.769
30	41.358		80	97.058		130	140.852		180	180.000	
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ

$$E = M + e \sin E.$$

$e = 0.31$											
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	0.725	30	41.850	1.297	80	97.605	0.958	130	141.143	0.805
0.5	0.725	0.725	31	43.147	1.288	81	98.563	0.954	131	141.948	0.803
1.0	1.450	0.724	32	44.435	1.281	82	99.517	0.949	132	142.751	0.801
1.5	2.174	0.724	33	45.716	1.273	83	100.466	0.945	133	143.552	0.800
2.0	2.898	0.724	34	46.989	1.264	84	101.411	0.940	134	144.352	0.798
2.5	3.622	0.724	35	48.253	1.255	85	102.351	0.935	135	145.150	0.796
3.0	4.346	0.724	36	49.508	1.248	86	103.286	0.932	136	145.946	0.795
3.5	5.070	0.723	37	50.756	1.240	87	104.218	0.927	137	146.741	0.794
4.0	5.793	0.722	38	51.996	1.231	88	105.145	0.923	138	147.535	0.792
4.5	6.515	0.722	39	53.227	1.224	89	106.068	0.919	139	148.327	0.790
5.0	7.237	0.722	40	54.451	1.216	90	106.987	0.915	140	149.117	0.789
5.5	7.959	0.722	41	55.667	1.208	91	107.902	0.911	141	149.906	0.788
6.0	8.681	0.721	42	56.875	1.200	92	108.813	0.907	142	150.694	0.787
6.5	9.402	0.720	43	58.075	1.192	93	109.720	0.903	143	151.481	0.785
7.0	10.122	0.719	44	59.267	1.184	94	110.623	0.900	144	152.266	0.784
7.5	10.841	0.718	45	60.451	1.175	95	111.523	0.896	145	153.050	0.783
8.0	11.559	0.718	46	61.626	1.169	96	112.419	0.893	146	153.833	0.782
8.5	12.277	0.717	47	62.795	1.163	97	113.312	0.889	147	154.615	0.780
9.0	12.994	0.716	48	63.958	1.154	98	114.201	0.886	148	155.395	0.780
9.5	13.710	0.715	49	65.112	1.147	99	115.087	0.882	149	156.175	0.779
10.0	14.425	0.714	50	66.259	1.139	100	115.969	0.878	150	156.954	0.777
10.5	15.139	0.713	51	67.398	1.131	101	116.847	0.876	151	157.731	0.776
11.0	15.852	0.712	52	68.529	1.125	102	117.723	0.872	152	158.507	0.776
11.5	16.564	0.711	53	69.654	1.117	103	118.595	0.869	153	159.283	0.775
12.0	17.275	0.710	54	70.771	1.110	104	119.464	0.867	154	160.058	0.774
12.5	17.985	0.709	55	71.881	1.103	105	120.331	0.863	155	160.832	0.773
13.0	18.694	0.707	56	72.984	1.096	106	121.194	0.859	156	161.605	0.772
13.5	19.401	0.706	57	74.080	1.090	107	122.053	0.857	157	162.377	0.771
14.0	20.107	0.704	58	75.170	1.083	108	122.910	0.855	158	163.148	0.771
14.5	20.811	0.703	59	76.253	1.076	109	123.765	0.852	159	163.919	0.770
15.0	21.514	0.702	60	77.329	1.070	110	124.617	0.849	160	164.689	0.770
15.5	22.216	0.700	61	78.399	1.063	111	125.466	0.847	161	165.459	0.769
16.0	22.916	0.699	62	79.462	1.057	112	126.313	0.84[illegible]	162	166.228	0.768
16.5	23.615	0.698	63	80.519	1.051	113	127.156	0.841	163	166.996	0.768
17.0	24.313	0.696	64	81.570	1.045	114	127.997	0.838	164	167.764	0.767
17.5	25.009	0.695	65	82.615	1.038	115	128.835	0.836	165	168.531	0.767
18.0	25.704	0.693	66	83.653	1.032	116	129.671	0.834	166	169.298	0.766
18.5	26.397	0.692	67	84.685	1.027	117	130.505	0.832	167	170.064	0.766
19.0	27.089	0.690	68	85.712	1.021	118	131.337	0.829	168	170.830	0.766
19.5	27.779	0.688	69	86.733	1.015	119	132.166	0.827	169	171.596	0.765
20	28.467	1.371	70	87.748	1.010	120	132.993	0.824	170	172.361	0.765
21	29.838	1.364	71	88.758	1.004	121	133.817	0.822	171	173.126	0.765
22	31.202	1.358	72	89.762	0.999	122	134.639	0.820	172	173.891	0.764
23	32.560	1.349	73	90.761	0.993	123	135.459	0.818	173	174.655	0.764
24	33.909	1.342	74	91.754	0.988	124	136.277	0.816	174	175.419	0.763
25	35.251	1.336	75	92.742	0.982	125	137.093	0.814	175	176.182	0.764
26	36.587	1.327	76	93.724	0.978	126	137.907	0.812	176	176.946	0.764
27	37.914	1.319	77	94.702	0.972	127	138.719	0.810	177	177.710	0.763
28	39.233	1.313	78	95.674	0.968	128	139.529	0.808	178	178.473	0.764
29	40.546	1.304	79	96.642	0.983	129	140.337	0.806	179	179.237	0.763
30	41.850		80	97.605		130	141.143		180	180.000	
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ

$$E = M + e \sin E.$$

$e = 0.32$											
M	*E*	*Δ*	*M*	*E*	*Δ*	*M*	*E*	*Δ*	*M*	*E*	*Δ*
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	0.735	30	42.352	1.306	80	98.149	0.954	130	141.431	0.799
0.5	0.735	0.736	31	43.658	1.297	81	99.103	0.949	131	142.230	0.797
1.0	1.471	0.735	32	44.955	1.288	82	100.052	0.945	132	143.027	0.796
1.5	2.206	0.735	33	46.243	1.280	83	100.997	0.941	133	143.823	0.794
2.0	2.941	0.734	34	47.523	1.271	84	101.938	0.936	134	144.617	0.792
2.5	3.675	0.735	35	48.794	1.263	85	102.874	0.930	135	145.409	0.791
3.0	4.410	0.734	36	50.057	1.254	86	103.804	0.927	136	146.200	0.789
3.5	5.144	0.734	37	51.311	1.246	87	104.731	0.923	137	146.989	0.788
4.0	5.878	0.733	38	52.557	1.237	88	105.654	0.919	138	147.777	0.786
4.5	6.611	0.732	39	53.794	1.228	89	106.573	0.915	139	148.563	0.785
5.0	7.343	0.732	40	55.022	1.221	90	107.488	0.910	140	149.348	0.784
5.5	8.075	0.732	41	56.243	1.213	91	108.398	0.906	141	150.132	0.782
6.0	8.807	0.731	42	57.456	1.204	92	109.304	0.902	142	150.914	0.781
6.5	9.538	0.730	43	58.660	1.195	93	110.206	0.898	143	151.695	0.779
7.0	10.268	0.730	44	59.855	1.187	94	111.104	0.895	144	152.474	0.778
7.5	10.998	0.729	45	61.042	1.179	95	111.999	0.891	145	153.252	0.777
8.0	11.727	0.728	46	62.221	1.172	96	112.890	0.888	146	154.029	0.776
8.5	12.455	0.726	47	63.393	1.163	97	113.778	0.884	147	154.805	0.775
9.0	13.181	0.726	48	64.556	1.155	98	114.662	0.881	148	155.580	0.774
9.5	13.907	0.725	49	65.711	1.148	99	115.543	0.877	149	156.354	0.773
10.0	14.632	0.724	50	66.859	1.139	100	116.420	0.874	150	157.127	0.772
10.5	15.356	0.722	51	67.998	1.133	101	117.294	0.870	151	157.899	0.771
11.0	16.078	0.722	52	69.131	1.125	102	118.164	0.867	152	158.670	0.770
11.5	16.800	0.720	53	70.256	1.118	103	119.031	0.864	153	159.440	0.769
12.0	17.520	0.719	54	71.374	1.110	104	119.895	0.861	154	160.209	0.768
12.5	18.239	0.717	55	72.484	1.103	105	120.756	0.858	155	160.977	0.767
13.0	18.956	0.716	56	73.587	1.095	106	121.614	0.854	156	161.744	0.766
13.5	19.672	0.715	57	74.682	1.089	107	122.468	0.851	157	162.510	0.766
14.0	20.387	0.714	58	75.771	1.082	108	123.319	0.849	158	163.276	0.765
14.5	21.101	0.712	59	76.853	1.075	109	124.168	0.847	159	164.041	0.764
15.0	21.813	0.711	60	77.928	1.069	110	125.015	0.844	160	164.805	0.764
15.5	22.524	0.709	61	78.997	1.062	111	125.859	0.841	161	165.569	0.763
16.0	23.233	0.708	62	80.059	1.055	112	126.700	0.838	162	166.332	0.763
16.5	23.941	0.706	63	81.114	1.049	113	127.538	0.836	163	167.095	0.762
17.0	24.647	0.704	64	82.163	1.043	114	128.374	0.833	164	167.857	0.761
17.5	25.351	0.703	65	83.206	1.036	115	129.207	0.830	165	168.618	0.761
18.0	26.054	0.701	66	84.242	1.030	116	130.037	0.828	166	169.379	0.761
18.5	26.755	0.699	67	85.272	1.024	117	130.865	0.826	167	170.140	0.760
19.0	27.454	0.697	68	86.296	1.019	118	131.691	0.824	168	170.900	0.759
19.5	28.151	0.696	69	87.315	1.012	119	132.515	0.821	169	171.659	0.759
20	28.847	1.386	70	88.327	1.007	120	133.336	0.819	170	172.418	0.760
21	30.233	1.378	71	89.334	1.000	121	134.155	0.817	171	173.178	0.759
22	31.611	1.371	72	90.334	0.996	122	134.972	0.814	172	173.937	0.758
23	32.982	1.363	73	91.330	0.990	123	135.786	0.812	173	174.695	0.758
24	34.345	1.354	74	92.320	0.984	124	136.598	0.810	174	175.453	0.758
25	35.699	1.347	75	93.304	0.979	125	137.408	0.809	175	176.211	0.758
26	37.046	1.339	76	94.283	0.974	126	138.217	0.807	176	176.969	0.758
27	38.385	1.330	77	95.257	0.969	127	139.024	0.805	177	177.727	0.758
28	39.715	1.322	78	96.226	0.964	128	139.829	0.802	178	178.485	0.758
29	41.037	1.315	79	97.190	0.959	129	140.631	0.800	179	179.243	0.757
30	42.352		80	98.149		130	141.431		180	180.000	
M	*E*	*Δ*	*M*	*E*	*Δ*	*M*	*E*	*Δ*	*M*	*E*	*Δ*

$E = M + e \sin E.$

$e = 0.33$

M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	0.746	30	42.861	1.316	80	98.691	0.950	130	141.715	0.793
0.5	0.746	0.747	31	44.177	1.306	81	99.641	0.945	131	142.508	0.792
1.0	1.493	0.746	32	45.483	1.296	82	100.586	0.940	132	143.300	0.790
1.5	2.239	0.746	33	46.779	1.287	83	101.526	0.936	133	144.090	0.788
2.0	2.985	0.745	34	48.066	1.278	84	102.462	0.931	134	144.878	0.787
2.5	3.730	0.745	35	49.344	1.269	85	103.393	0.927	135	145.665	0.785
3.0	4.475	0.745	36	50.613	1.260	86	104.320	0.923	136	146.450	0.784
3.5	5.220	0.745	37	51.873	1.252	87	105.243	0.918	137	147.234	0.782
4.0	5.965	0.744	38	53.125	1.242	88	106.161	0.913	138	148.016	0.780
4.5	6.709	0.743	39	54.367	1.233	89	107.074	0.910	139	148.796	0.779
5.0	7.452	0.743	40	55.600	1.225	90	107.984	0.905	140	149.575	0.778
5.5	8.195	0.742	41	56.825	1.217	91	108.889	0.902	141	150.353	0.776
6.0	8.937	0.741	42	58.042	1.207	92	109.791	0.897	142	151.129	0.775
6.5	9.678	0.741	43	59.249	1.198	93	110.688	0.894	143	151.904	0.774
7.0	10.419	0.740	44	60.447	1.191	94	111.582	0.890	144	152.678	0.773
7.5	11.159	0.740	45	61.638	1.182	95	112.472	0.886	145	153.451	0.772
8.0	11.899	0.738	46	62.820	1.173	96	113.358	0.882	146	154.223	0.770
8.5	12.637	0.737	47	63.993	1.164	97	114.240	0.879	147	154.993	0.769
9.0	13.374	0.736	48	65.157	1.157	98	115.119	0.876	148	155.762	0.769
9.5	14.110	0.734	49	66.314	1.149	99	115.995	0.872	149	156.531	0.767
10.0	14.844	0.734	50	67.463	1.140	100	116.867	0.868	150	157.298	0.766
10.5	15.578	0.733	51	68.603	1.133	101	117.735	0.865	151	158.064	0.765
11.0	16.311	0.731	52	69.736	1.126	102	118.600	0.862	152	158.829	0.764
11.5	17.042	0.730	53	70.862	1.118	103	119.462	0.859	153	159.593	0.763
12.0	17.772	0.728	54	71.980	1.110	104	120.321	0.856	154	160.356	0.762
12.5	18.500	0.727	55	73.090	1.102	105	121.177	0.852	155	161.118	0.762
13.0	19.227	0.726	56	74.192	1.094	106	122.029	0.849	156	161.880	0.761
13.5	19.953	0.724	57	75.286	1.088	107	122.878	0.847	157	162.641	0.760
14.0	20.677	0.722	58	76.374	1.081	108	123.725	0.844	158	163.401	0.759
14.5	21.399	0.721	59	77.455	1.074	109	124.569	0.841	159	164.160	0.759
15.0	22.120	0.719	60	78.529	1.067	110	125.410	0.838	160	164.919	0.758
15.5	22.839	0.718	61	79.596	1.060	111	126.248	0.836	161	165.677	0.758
16.0	23.557	0.716	62	80.656	1.054	112	127.084	0.833	162	166.435	0.757
16.5	24.273	0.715	63	81.710	1.047	113	127.917	0.830	163	167.192	0.756
17.0	24.988	0.713	64	82.757	1.040	114	128.747	0.827	164	167.948	0.756
17.5	25.701	0.710	65	83.797	1.034	115	129.574	0.825	165	168.704	0.755
18.0	26.411	0.709	66	84.831	1.027	116	130.399	0.823	166	169.459	0.755
18.5	27.120	0.707	67	85.858	1.022	117	131.222	0.820	167	170.214	0.754
19.0	27.827	0.705	68	86.880	1.015	118	132.042	0.818	168	170.968	0.754
19.5	28.532	0.703	69	87.895	1.009	119	132.860	0.816	169	171.722	0.753
20	29.235	1.401	70	88.904	1.004	120	133.676	0.813	170	172.475	0.754
21	30.636	1.392	71	89.908	0.997	121	134.489	0.811	171	173.229	0.753
22	32.028	1.384	72	90.905	0.992	122	135.300	0.809	172	173.982	0.753
23	33.412	1.376	73	91.897	0.987	123	136.109	0.807	173	174.735	0.753
24	34.788	1.368	74	92.884	0.981	124	136.916	0.805	174	175.488	0.752
25	36.156	1.359	75	93.865	0.975	125	137.721	0.803	175	176.240	0.752
26	37.515	1.349	76	94.840	0.971	126	138.524	0.800	176	176.992	0.752
27	38.864	1.341	77	95.811	0.965	127	139.324	0.799	177	177.744	0.752
28	40.205	1.332	78	96.776	0.960	128	140.123	0.797	178	178.496	0.752
29	41.537	1.324	79	97.736	0.955	129	140.920	0.795	179	179.248	0.752
30	42.861		80	98.691		130	141.715		180	180.000	
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ

$$E = M + e \sin E.$$

$e = 0.34$

M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	0.758	30	43.380	1.324	80	99.228	0.946	130	141.995	0.788
0.5	0.758	0.757	31	44.704	1.314	81	100.174	0.941	131	142.783	0.786
1.0	1.515	0.757	32	46.018	1.304	82	101.115	0.936	132	143.569	0.784
1.5	2.272	0.758	33	47.322	1.295	83	102.051	0.932	133	144.353	0.783
2.0	3.030	0.757	34	48.617	1.285	84	102.983	0.926	134	145.136	0.781
2.5	3.787	0.756	35	49.902	1.275	85	103.909	0.922	135	145.917	0.779
3.0	4.543	0.756	36	51.177	1.266	86	104.831	0.918	136	146.696	0.778
3.5	5.299	0.755	37	52.443	1.257	87	105.749	0.913	137	147.474	0.777
4.0	6.054	0.755	38	53.700	1.247	88	106.662	0.909	138	148.251	0.775
4.5	6.809	0.755	39	54.947	1.237	89	107.571	0.905	139	149.026	0.774
5.0	7.564	0.754	40	56.184	1.228	90	108.476	0.901	140	149.800	0.772
5.5	8.318	0.753	41	57.412	1.220	91	109.377	0.897	141	150.572	0.771
6.0	9.071	0.752	42	58.632	1.212	92	110.274	0.892	142	151.343	0.769
6.5	9.823	0.752	43	59.844	1.202	93	111.166	0.889	143	152.112	0.768
7.0	10.575	0.751	44	61.046	1.192	94	112.055	0.885	144	152.880	0.767
7.5	11.326	0.749	45	62.238	1.183	95	112.940	0.881	145	153.647	0.766
8.0	12.075	0.749	46	63.421	1.175	96	113.821	0.877	146	154.213	0.765
8.5	12.824	0.748	47	64.596	1.167	97	114.698	0.874	147	155.178	0.764
9.0	13.572	0.746	48	65.763	1.158	98	115.572	0.871	148	155.942	0.763
9.5	14.318	0.745	49	66.921	1.149	99	116.443	0.867	149	156.705	0.762
10.0	15.063	0.743	50	68.070	1.142	100	117.310	0.863	150	157.467	0.760
10.5	15.806	0.743	51	69.212	1.133	101	118.173	0.860	151	158.227	0.759
11.0	16.549	0.741	52	70.345	1.125	102	119.033	0.857	152	158.986	0.758
11.5	17.290	0.740	53	71.470	1.117	103	119.890	0.853	153	159.744	0.758
12.0	18.030	0.738	54	72.587	1.110	104	120.743	0.850	154	160.502	0.757
12.5	18.768	0.736	55	73.697	1.102	105	121.593	0.847	155	161.259	0.756
13.0	19.504	0.735	56	74.799	1.094	106	122.440	0.844	156	162.015	0.755
13.5	20.239	0.734	57	75.893	1.086	107	123.284	0.841	157	162.770	0.754
14.0	20.973	0.732	58	76.979	1.079	108	124.125	0.839	158	163.524	0.754
14.5	21.705	0.730	59	78.058	1.072	109	124.964	0.836	159	164.278	0.753
15.0	22.435	0.728	60	79.130	1.065	110	125.800	0.833	160	165.031	0.753
15.5	22.663	0.726	61	80.195	1.058	111	126.633	0.830	161	165.784	0.752
16.0	23.889	0.725	62	81.253	1.052	112	127.463	0.827	162	166.536	0.751
16.5	24.614	0.723	63	82.305	1.044	113	128.290	0.824	163	167.287	0.751
17.0	25.337	0.721	64	83.349	1.038	114	129.114	0.822	164	168.038	0.750
17.5	26.058	0.719	65	84.387	1.031	115	129.936	0.820	165	168.788	0.750
18.0	26.777	0.717	66	85.418	1.025	116	130.756	0.817	166	169.538	0.749
18.5	27.494	0.715	67	86.443	1.018	117	131.573	0.815	167	170.287	0.749
19.0	28.209	0.713	68	87.461	1.013	118	132.388	0.813	168	171.036	0.748
19.5	28.922	0.710	69	88.474	1.006	119	133.201	0.810	169	171.784	0.748
20	29.632	1.416	70	89.480	1.000	120	134.011	0.808	170	172.532	0.748
21	31.048	1.407	71	90.480	0.994	121	134.819	0.806	171	173.280	0.747
22	32.455	1.397	72	91.474	0.989	122	135.625	0.803	172	174.027	0.747
23	33.852	1.389	73	92.463	0.983	123	136.428	0.801	173	174.774	0.747
24	35.241	1.380	74	93.446	0.976	124	137.229	0.799	174	175.521	0.747
25	36.621	1.370	75	94.422	0.971	125	138.028	0.797	175	176.268	0.747
26	37.991	1.361	76	95.393	0.967	126	138.825	0.795	176	177.015	0.747
27	39.352	1.352	77	96.360	0.961	127	139.620	0.793	177	177.762	0.746
28	40.704	1.342	78	97.321	0.956	128	140.413	0.792	178	178.508	0.746
29	42.046	1.334	79	98.277	0.951	129	141.205	0.790	179	179.254	0.746
30	43.380		80	99.228		130	141.995		180	180.000	
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ

$E = M + e \sin E.$

$e = 0.35$

M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	0.769	30	43.907	1.332	80	99.762	0.942	130	142.271	0.782
0.5	0.769	0.769	31	45.239	1.322	81	100.704	0.937	131	143.053	0.781
1.0	1.538	0.769	32	46.561	1.312	82	101.641	0.931	132	143.834	0.779
1.5	2.307	0.769	33	47.873	1.302	83	102.572	0.927	133	144.613	0.777
2.0	3.076	0.769	34	49.175	1.292	84	103.499	0.922	134	145.390	0.776
2.5	3.845	0.768	35	50.467	1.281	85	104.421	0.918	135	146.166	0.774
3.0	4.613	0.767	36	51.748	1.271	86	105.339	0.913	136	146.940	0.772
3.5	5.380	0.767	37	53.019	1.262	87	106.252	0.909	137	147.712	0.771
4.0	6.147	0.767	38	54.281	1.252	88	107.161	0.904	138	148.483	0.769
4.5	6.914	0.766	39	55.533	1.242	89	108.065	0.900	139	149.252	0.768
5.0	7.680	0.765	40	56.775	1.233	90	108.965	0.896	140	150.020	0.767
5.5	8.445	0.764	41	58.008	1.223	91	109.861	0.892	141	150.787	0.765
6.0	9.209	0.763	42	59.231	1.213	92	110.753	0.887	142	151.552	0.764
6.5	9.972	0.763	43	60.444	1.204	93	111.640	0.884	143	152.316	0.763
7.0	10.735	0.762	44	61.648	1.195	94	112.524	0.880	144	153.079	0.761
7.5	11.497	0.760	45	62.843	1.185	95	113.404	0.876	145	153.840	0.761
8.0	12.257	0.760	46	64.028	1.176	96	114.280	0.872	146	154.601	0.760
8.5	13.017	0.758	47	65.204	1.168	97	115.152	0.869	147	155.361	0.758
9.0	13.775	0.757	48	66.372	1.159	98	116.021	0.865	148	156.119	0.757
9.5	14.532	0.755	49	67.531	1.150	99	116.886	0.861	149	156.876	0.756
10.0	15.287	0.754	50	68.681	1.142	100	117.747	0.858	150	157.632	0.755
10.5	16.041	0.753	51	69.823	1.133	101	118.605	0.855	151	158.387	0.754
11.0	16.794	0.751	52	70.956	1.125	102	119.460	0.851	152	159.141	0.753
11.5	17.545	0.750	53	72.081	1.116	103	120.311	0.848	153	159.894	0.752
12.0	18.295	0.748	54	73.197	1.109	104	121.159	0.846	154	160.646	0.751
12.5	19.043	0.746	55	74.306	1.101	105	122.005	0.842	155	161.397	0.750
13.0	19.789	0.745	56	75.407	1.092	106	122.847	0.839	156	162.147	0.750
13.5	20.534	0.743	57	76.499	1.086	107	123.686	0.836	157	162.897	0.749
14.0	21.277	0.741	58	77.585	1.077	108	124.522	0.833	158	163.646	0.748
14.5	22.018	0.739	59	78.662	1.070	109	125.355	0.830	159	164.394	0.748
15.0	22.757	0.737	60	79.732	1.063	110	126.185	0.828	160	165.142	0.747
15.5	23.494	0.736	61	80.795	1.056	111	127.013	0.825	161	165.889	0.746
16.0	24.230	0.734	62	81.851	1.049	112	127.838	0.822	162	166.635	0.746
16.5	24.964	0.731	63	82.900	1.042	113	128.660	0.819	163	167.381	0.745
17.0	25.695	0.729	64	83.942	1.035	114	129.479	0.816	164	168.126	0.745
17.5	26.424	0.727	65	84.977	1.028	115	130.295	0.814	165	168.871	0.744
18.0	27.151	0.725	66	86.005	1.022	116	131.109	0.812	166	169.615	0.744
18.5	27.876	0.723	67	87.027	1.015	117	131.921	0.809	167	170.359	0.743
19.0	28.599	0.721	68	88.042	1.009	118	132.730	0.807	168	171.102	0.743
19.5	29.320	0.718	69	89.051	1.003	119	133.537	0.805	169	171.845	0.742
20	30.038	1.431	70	90.054	0.997	120	134.342	0.802	170	172.587	0.742
21	31.469	1.421	71	91.051	0.990	121	135.144	0.800	171	173.329	0.742
22	32.890	1.411	72	92.041	0.985	122	135.944	0.798	172	174.071	0.742
23	34.301	1.402	73	93.026	0.979	123	136.742	0.796	173	174.813	0.742
24	35.703	1.392	74	94.005	0.973	124	137.538	0.794	174	175.555	0.741
25	37.095	1.382	75	94.978	0.968	125	138.332	0.792	175	176.296	0.741
26	38.477	1.372	76	95.946	0.962	126	139.124	0.790	176	177.037	0.741
27	39.849	1.363	77	96.908	0.957	127	139.914	0.788	177	177.778	0.741
28	41.212	1.352	78	97.865	0.951	128	140.702	0.786	178	178.519	0.741
29	42.564	1.343	79	98.816	0.946	129	141.488	0.783	179	179.260	0.740
30	43.907		80	99.762		130	142.271		180	180.000	
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ

$$E = M + e \sin E.$$

$e = 0.36$											
M	*E*	*Δ*	*M*	*E*	*Δ*	*M*	*E*	*Δ*	*M*	*E*	*Δ*
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	0.781	30	44.443	1.340	80	100.294	0.937	130	142.544	0.777
0.5	0.781	0.781	31	45.783	1.330	81	101.231	0.932	131	143.321	0.775
1.0	1.562	0.781	32	47.113	1.319	82	102.163	0.927	132	144.096	0.773
1.5	2.343	0.781	33	48.432	1.309	83	103.090	0.922	133	144.869	0.772
2.0	3.124	0.780	34	49.741	1.298	84	104.012	0.917	134	145.641	0.770
2.5	3.904	0.780	35	51.039	1.287	85	104.929	0.913	135	146.411	0.769
3.0	4.684	0.780	36	52.326	1.276	86	105.842	0.909	136	147.180	0.767
3.5	5.464	0.779	37	53.602	1.267	87	106.751	0.904	137	147.947	0.765
4.0	6.243	0.778	38	54.869	1.256	88	107.655	0.899	138	148.712	0.764
4.5	7.021	0.778	39	56.125	1.246	89	108.554	0.895	139	149.476	0.762
5.0	7.799	0.777	40	57.371	1.236	90	109.449	0.891	140	150.238	0.761
5.5	8.576	0.776	41	58.607	1.226	91	110.340	0.887	141	150.999	0.760
6.0	9.352	0.775	42	59.833	1.215	92	111.227	0.883	142	151.759	0.759
6.5	10.127	0.774	43	61.048	1.206	93	112.110	0.878	143	152.518	0.757
7.0	10.901	0.772	44	62.254	1.197	94	112.988	0.875	144	153.275	0.756
7.5	11.673	0.772	45	63.451	1.187	95	113.863	0.871	145	154.031	0.756
8.0	12.445	0.771	46	64.638	1.178	96	114.734	0.867	146	154.787	0.754
8.5	13.216	0.769	47	65.816	1.168	97	115.601	0.864	147	155.541	0.753
9.0	13.985	0.768	48	66.984	1.159	98	116.465	0.860	148	156.294	0.752
9.5	14.753	0.766	49	68.143	1.150	99	117.325	0.856	149	157.046	0.750
10.0	15.519	0.765	50	69.293	1.142	100	118.181	0.853	150	157.796	0.749
10.5	16.284	0.763	51	70.435	1.132	101	119.034	0.849	151	158.545	0.748
11.0	17.047	0.761	52	71.568	1.124	102	119.883	0.846	152	159.293	0.748
11.5	17.808	0.760	53	72.692	1.115	103	120.729	0.843	153	160.041	0.747
12.0	18.568	0.758	54	73.807	1.108	104	121.572	0.840	154	160.788	0.746
12.5	19.326	0.757	55	74.915	1.101	105	122.412	0.837	155	161.534	0.744
13.0	20.083	0.755	56	76.016	1.091	106	123.249	0.834	156	162.278	0.744
13.5	20.838	0.753	57	77.107	1.082	107	124.083	0.831	157	163.022	0.744
14.0	21.591	0.751	58	78.189	1.076	108	124.914	0.827	158	163.766	0.743
14.5	22.342	0.749	59	79.265	1.067	109	125.741	0.825	159	164.509	0.742
15.0	23.091	0.746	60	80.332	1.061	110	126.566	0.822	160	165.251	0.741
15.5	23.837	0.744	61	81.393	1.054	111	127.388	0.820	161	165.992	0.741
16.0	24.581	0.742	62	82.447	1.047	112	128.208	0.817	162	166.733	0.740
16.5	25.323	0.740	63	83.494	1.039	113	129.025	0.814	163	167.473	0.740
17.0	26.063	0.738	64	84.533	1.032	114	129.839	0.811	164	168.213	0.739
17.5	26.801	0.735	65	85.565	1.025	115	130.650	0.808	165	168.952	0.739
18.0	27.536	0.733	66	86.590	1.019	116	131.458	0.806	166	169.691	0.738
18.5	28.269	0.731	67	87.609	1.012	117	132.264	0.804	167	170.429	0.738
19.0	29.000	0.729	68	88.621	1.005	118	133.068	0.802	168	171.167	0.738
19.5	29.729	0.726	69	89.626	1.000	119	133.870	0.799	169	171.905	0.737
20	30.455	1.446	70	90.626	0.993	120	134.669	0.797	170	172.642	0.737
21	31.901	1.435	71	91.619	0.986	121	135.466	0.795	171	173.379	0.736
22	33.336	1.425	72	92.605	0.981	122	136.261	0.793	172	174.115	0.736
23	34.761	1.414	73	93.586	0.975	123	137.054	0.790	173	174.851	0.736
24	36.175	1.404	74	94.561	0.969	124	137.844	0.788	174	175.587	0.736
25	37.579	1.394	75	95.530	0.964	125	138.632	0.786	175	176.323	0.736
26	38.973	1.383	76	96.494	0.958	126	139.418	0.784	176	177.059	0.736
27	40.356	1.373	77	97.452	0.953	127	140.202	0.782	177	177.795	0.735
28	41.729	1.362	78	98.405	0.947	128	140.984	0.781	178	178.530	0.735
29	43.091	1.352	79	99.352	0.942	129	141.765	0.779	179	179.265	0.735
30	44.443		80	100.294		130	142.544		180	180.000	
M	*E*	*Δ*	*M*	*E*	*Δ*	*M*	*E*	*Δ*	*M*	*E*	*Δ*

$$E = M + e \sin E.$$

$e = 0.37$

M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	0.794	30	44.987	1.349	80	100.822	0.932	130	142.813	0.771
0.5	0.794	0.793	31	46.336	1.337	81	101.754	0.927	131	143.584	0.770
1.0	1.587	0.793	32	47.673	1.326	82	102.681	0.923	132	144.354	0.768
1.5	2.380	0.793	33	48.999	1.315	83	103.604	0.918	133	145.122	0.767
2.0	3.173	0.793	34	50.314	1.304	84	104.522	0.913	134	145.889	0.765
2.5	3.966	0.792	35	51.618	1.292	85	105.435	0.908	135	146.654	0.763
3.0	4.758	0.792	36	52.910	1.282	86	106.343	0.903	136	147.417	0.761
3.5	5.550	0.791	37	54.192	1.271	87	107.246	0.899	137	148.178	0.760
4.0	6.341	0.790	38	55.463	1.260	88	108.145	0.895	138	148.938	0.759
4.5	7.131	0.790	39	56.723	1.249	89	109.040	0.890	139	149.697	0.757
5.0	7.921	0.789	40	57.772	1.239	90	109.930	0.886	140	150.454	0.756
5.5	8.710	0.788	41	59.211	1.229	91	110.816	0.882	141	151.210	0.754
6.0	9.498	0.787	42	60.440	1.218	92	111.698	0.877	142	151.964	0.753
6.5	10.285	0.786	43	61.658	1.207	93	112.575	0.874	143	152.717	0.752
7.0	11.071	0.785	44	62.865	1.198	94	113.449	0.870	144	153.469	0.751
7.5	11.856	0.783	45	64.063	1.188	95	114.319	0.866	145	154.220	0.750
8.0	12.639	0.782	46	65.251	1.179	96	115.185	0.862	146	154.970	0.749
8.5	13.421	0.781	47	66.430	1.169	97	116.047	0.858	147	155.719	0.747
9.0	14.202	0.779	48	67.599	1.159	98	116.905	0.854	148	156.466	0.746
9.5	14.981	0.777	49	68.758	1.150	99	117.759	0.851	149	157.212	0.745
10.0	15.758	0.776	50	69.908	1.141	100	118.610	0.848	150	157.957	0.744
10.5	16.534	0.774	51	71.049	1.133	101	119.458	0.845	151	158.701	0.743
11.0	17.308	0.772	52	72.182	1.123	102	120.303	0.841	152	159.444	0.743
11.5	18.080	0.770	53	73.305	1.115	103	121.144	0.838	153	160.187	0.741
12.0	18.850	0.768	54	74.420	1.106	104	121.982	0.835	154	160.928	0.740
12.5	19.618	0.766	55	75.526	1.097	105	122.817	0.831	155	161.668	0.739
13.0	20.384	0.764	56	76.623	1.089	106	123.648	0.828	156	162.407	0.739
13.5	21.148	0.763	57	77.712	1.081	107	124.476	0.825	157	163.146	0.738
14.0	21.911	0.761	58	78.793	1.074	108	125.301	0.822	158	163.884	0.738
14.5	22.672	0.758	59	79.867	1.066	109	126.123	0.820	159	164.622	0.737
15.0	23.430	0.756	60	80.933	1.059	110	126.943	0.817	160	165.359	0.736
15.5	24.186	0.753	61	81.992	1.051	111	127.760	0.814	161	166.095	0.735
16.0	24.939	0.751	62	83.043	1.044	112	128.574	0.811	162	166.830	0.735
16.5	25.690	0.749	63	84.087	1.036	113	129.385	0.809	163	167.565	0.734
17.0	26.439	0.747	64	85.123	1.029	114	130.194	0.806	164	168.299	0.734
17.5	27.186	0.744	65	86.152	1.022	115	131.000	0.803	165	169.033	0.733
18.0	27.930	0.742	66	87.174	1.015	116	131.803	0.801	166	169.766	0.733
18.5	28.672	0.739	67	88.189	1.008	117	132.604	0.798	167	170.499	0.733
19.0	29.411	0.736	68	89.197	1.002	118	133.402	0.796	168	171.232	0.732
19.5	30.147	0.734	69	90.199	0.996	119	134.198	0.794	169	171.964	0.732
20	30.881	1.460	70	91.195	0.989	120	134.992	0.792	170	172.696	0.731
21	32.341	1.450	71	92.184	0.983	121	135.784	0.789	171	173.427	0.731
22	33.791	1.439	72	93.167	0.977	122	136.573	0.787	172	174.158	0.731
23	35.230	1.427	73	94.144	0.971	123	137.360	0.785	173	174.889	0.731
24	36.657	1.416	74	95.115	0.965	124	138.145	0.783	174	175.620	0.730
25	38.073	1.405	75	96.080	0.959	125	138.928	0.781	175	176.350	0.730
26	39.478	1.394	76	97.039	0.954	126	139.709	0.779	176	177.080	0.730
27	40.872	1.383	77	97.993	0.948	127	140.488	0.777	177	177.810	0.730
28	42.255	1.371	78	98.941	0.943	128	141.265	0.775	178	178.540	0.730
29	43.626	1.361	79	99.884	0.938	129	142.040	0.773	179	179.270	0.730
30	44.987		80	100.822		130	142.813		180	180.000	
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ

$E = M + e \sin E.$

$e = 0.38$											
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	0.807	30	45.540	1.357	80	101.346	0.928	130	143.079	0.766
0.5	0.807	0.806	31	46.897	1.345	81	102.274	0.923	131	143.845	0.764
1.0	1.613	0.806	32	48.242	1.333	82	103.197	0.918	132	144.609	0.763
1.5	2.419	0.806	33	49.575	1.321	83	104.115	0.913	133	145.372	0.761
2.0	3.225	0.805	34	50.896	1.309	84	105.028	0.908	134	146.133	0.760
2.5	4.030	0.805	35	52.205	1.297	85	105.936	0.903	135	146.893	0.758
3.0	4.835	0.805	36	53.502	1.286	86	106.839	0.898	136	147.651	0.756
3.5	5.640	0.803	37	54.788	1.275	87	107.737	0.894	137	148.407	0.754
4.0	6.443	0.803	38	56.063	1.264	88	108.631	0.890	138	149.161	0.753
4.5	7.246	0.802	39	57.327	1.252	89	109.521	0.885	139	149.914	0.752
5.0	8.048	0.801	40	58.579	1.241	90	110.406	0.881	140	150.666	0.751
5.5	8.849	0.800	41	59.820	1.232	91	111.287	0.877	141	151.417	0.749
6.0	9.649	0.799	42	61.052	1.220	92	112.164	0.872	142	152.166	0.747
6.5	10.448	0.798	43	62.272	1.209	93	113.036	0.869	143	152.913	0.747
7.0	11.246	0.797	44	63.481	1.199	94	113.905	0.864	144	153.660	0.745
7.5	12.043	0.795	45	64.680	1.189	95	114.769	0.861	145	154.405	0.744
8.0	12.838	0.794	46	65.869	1.179	96	115.630	0.857	146	155.149	0.743
8.5	13.632	0.792	47	67.048	1.169	97	116.487	0.853	147	155.892	0.742
9.0	14.424	0.791	48	68.217	1.159	98	117.340	0.850	148	156.634	0.741
9.5	15.215	0.788	49	69.376	1.150	99	118.190	0.846	149	157.375	0.741
10.0	16.003	0.787	50	70.526	1.141	100	119.036	0.842	150	158.116	0.739
10.5	16.790	0.785	51	71.667	1.131	101	119.878	0.839	151	158.855	0.738
11.0	17.575	0.783	52	72.798	1.122	102	120.717	0.836	152	159.593	0.737
11.5	18.358	0.781	53	73.920	1.113	103	121.553	0.833	153	160.330	0.735
12.0	19.139	0.779	54	75.033	1.104	104	122.386	0.829	154	161.065	0.735
12.5	19.918	0.777	55	76.137	1.097	105	123.215	0.826	155	161.800	0.734
13.0	20.695	0.775	56	77.234	1.088	106	124.041	0.824	156	162.534	0.734
13.5	21.470	0.772	57	78.322	1.079	107	124.865	0.820	157	163.268	0.733
14.0	22.242	0.770	58	79.401	1.071	108	125.685	0.816	158	164.001	0.732
14.5	23.012	0.768	59	80.472	1.063	109	126.501	0.814	159	164.733	0.732
15.0	23.780	0.765	60	81.535	1.056	110	127.315	0.812	160	165.465	0.730
15.5	24.545	0.763	61	82.591	1.047	111	128.127	0.809	161	166.195	0.730
16.0	25.308	0.761	62	83.638	1.041	112	128.936	0.806	162	166.925	0.730
16.5	26.069	0.758	63	84.679	1.032	113	129.742	0.803	163	167.655	0.729
17.0	26.827	0.755	64	85.711	1.026	114	130.545	0.801	164	168.384	0.729
17.5	27.582	0.752	65	86.737	1.019	115	131.346	0.798	165	169.113	0.728
18.0	28.334	0.750	66	87.756	1.011	116	132.144	0.795	166	169.841	0.727
18.5	29.084	0.747	67	88.767	1.005	117	132.939	0.793	167	170.568	0.727
19.0	29.831	0.744	68	89.772	0.998	118	133.732	0.791	168	171.295	0.727
19.5	30.575	0.742	69	90.770	0.992	119	134.523	0.789	169	172.022	0.726
20	31.317	1.476	70	91.762	0.985	120	135.312	0.786	170	172.748	0.726
21	32.793	1.464	71	92.747	0.979	121	136.098	0.784	171	173.474	0.726
22	34.257	1.451	72	93.726	0.973	122	136.882	0.782	172	174.200	0.726
23	35.708	1.440	73	94.699	0.967	123	137.664	0.780	173	174.926	0.725
24	37.148	1.429	74	95.666	0.960	124	138.444	0.777	174	175.651	0.725
25	38.577	1.416	75	96.626	0.955	125	139.221	0.775	175	176.376	0.725
26	39.993	1.404	76	97.581	0.950	126	139.996	0.773	176	177.101	0.725
27	41.397	1.393	77	98.531	0.944	127	140.769	0.772	177	177.826	0.725
28	42.790	1.381	78	99.475	0.938	128	141.541	0.770	178	178.551	0.725
29	44.171	1.369	79	100.413	0.933	129	142.311	0.768	179	179.276	0.724
30	45.540		80	101.346		130	143.079		180	180.000	
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ

$$E = M + e \sin E.$$

$e = 0.39$

M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	0.820	30	46.101	1.365	80	101.867	0.923	130	143.341	0.761
0.5	0.820	0.819	31	47.466	1.352	81	102.790	0.918	131	144.102	0.759
1.0	1.639	0.819	32	48.818	1.339	82	103.708	0.913	132	144.861	0.757
1.5	2.458	0.819	33	50.157	1.327	83	104.621	0.909	133	145.618	0.756
2.0	3.277	0.819	34	51.484	1.314	84	105.530	0.903	134	146.374	0.755
2.5	4.096	0.818	35	52.798	1.303	85	106.433	0.898	135	147.129	0.753
3.0	4.914	0.818	36	54.101	1.290	86	107.331	0.894	136	147.882	0.750
3.5	5.732	0.816	37	55.391	1.279	87	108.225	0.890	137	148.632	0.749
4.0	6.548	0.816	38	56.670	1.267	88	109.115	0.884	138	149.381	0.748
4.5	7.364	0.815	39	57.937	1.255	89	109.999	0.879	139	150.129	0.747
5.0	8.179	0.814	40	59.192	1.246	90	110.878	0.876	140	150.876	0.745
5.5	8.993	0.813	41	60.436	1.233	91	111.754	0.872	141	151.621	0.744
6.0	9.806	0.811	42	61.669	1.221	92	112.626	0.867	142	152.365	0.742
6.5	10.617	0.810	43	62.890	1.210	93	113.493	0.863	143	153.107	0.741
7.0	11.427	0.809	44	64.100	1.201	94	114.356	0.860	144	153.848	0.740
7.5	12.236	0.807	45	65.301	1.189	95	115.216	0.856	145	154.588	0.740
8.0	13.043	0.806	46	66.490	1.179	96	116.072	0.852	146	155.328	0.738
8.5	13.849	0.804	47	67.669	1.169	97	116.924	0.847	147	156.066	0.736
9.0	14.653	0.802	48	68.838	1.158	98	117.771	0.844	148	156.802	0.736
9.5	15.455	0.800	49	69.997	1.149	99	118.615	0.841	149	157.538	0.735
10.0	16.255	0.798	50	71.146	1.139	100	119.456	0.838	150	158.273	0.734
10.5	17.053	0.796	51	72.285	1.130	101	120.294	0.834	151	159.007	0.732
11.0	17.849	0.794	52	73.415	1.121	102	121.128	0.830	152	159.739	0.731
11.5	18.643	0.793	53	74.536	1.112	103	121.958	0.827	153	160.470	0.731
12.0	19.436	0.790	54	75.648	1.102	104	122.785	0.824	154	161.201	0.730
12.5	20.226	0.787	55	76.750	1.094	105	123.609	0.822	155	161.931	0.729
13.0	21.013	0.785	56	77.844	1.085	106	124.431	0.818	156	162.660	0.728
13.5	21.798	0.782	57	78.929	1.077	107	125.249	0.815	157	163.388	0.728
14.0	22.580	0.780	58	80.006	1.069	108	126.064	0.811	158	164.116	0.727
14.5	23.360	0.778	59	81.075	1.060	109	126.875	0.809	159	164.843	0.726
15.0	24.138	0.775	60	82.135	1.052	110	127.684	0.806	160	165.569	0.725
15.5	24.913	0.773	61	83.187	1.045	111	128.490	0.803	161	166.294	0.725
16.0	25.686	0.769	62	84.232	1.038	112	129.293	0.801	162	167.019	0.725
16.5	26.455	0.767	63	85.270	1.029	113	130.094	0.798	163	167.744	0.724
17.0	27.222	0.764	64	86.299	1.022	114	130.892	0.795	164	168.468	0.723
17.5	27.986	0.761	65	87.321	1.015	115	131.687	0.793	165	169.191	0.723
18.0	28.747	0.758	66	88.336	1.008	116	132.480	0.790	166	169.914	0.722
18.5	29.505	0.756	67	89.344	1.001	117	133.270	0.788	167	170.636	0.722
19.0	30.261	0.753	68	90.345	0.993	118	134.058	0.786	168	171.358	0.722
19.5	31.014	0.749	69	91.338	0.988	119	134.844	0.783	169	172.080	0.721
20	31.763	1.490	70	92.326	0.982	120	135.627	0.781	170	172.801	0.721
21	33.253	1.478	71	93.308	0.975	121	136.408	0.779	171	173.522	0.720
22	34.731	1.466	72	94.283	0.968	122	137.187	0.777	172	174.242	0.720
23	36.197	1.452	73	95.251	0.962	123	137.964	0.774	173	174.962	0.720
24	37.649	1.440	74	96.213	0.957	124	138.738	0.772	174	175.682	0.720
25	39.089	1.428	75	97.170	0.951	125	139.510	0.770	175	176.402	0.720
26	40.517	1.415	76	98.121	0.945	126	140.280	0.768	176	177.122	0.720
27	41.932	1.403	77	99.066	0.939	127	141.048	0.766	177	177.842	0.719
28	43.335	1.389	78	100.005	0.934	128	141.814	0.764	178	178.561	0.720
29	44.724	1.377	79	100.939	0.928	129	142.578	0.763	179	179.281	0.719
30	46.101		80	101.867		130	143.341		180	180.000	
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ

$$E = M + e \sin E.$$

$e = 0.40$

M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	0.833	30	46.671	1.372	80	102.385	0.918	130	143.599	0.756
0.5	0.833	0.834	31	48.043	1.359	81	103.303	0.913	131	144.355	0.754
1.0	1.667	0.832	32	49.402	1.346	82	104.216	0.908	132	145.109	0.752
1.5	2.499	0.833	33	50.748	1.332	83	105.124	0.904	133	145.861	0.751
2.0	3.332	0.832	34	52.080	1.319	84	106.028	0.898	134	146.612	0.749
2.5	4.164	0.832	35	53.399	1.307	85	106.926	0.893	135	147.361	0.747
3.0	4.996	0.831	36	54.706	1.295	86	107.819	0.889	136	148.108	0.746
3.5	5.827	0.830	37	56.001	1.282	87	108.708	0.885	137	148.854	0.744
4.0	6.657	0.829	38	57.283	1.269	88	109.593	0.879	138	149.598	0.743
4.5	7.486	0.828	39	58.552	1.258	89	110.472	0.874	139	150.341	0.741
5.0	8.314	0.827	40	59.810	1.246	90	111.346	0.871	140	151.082	0.740
5.5	9.141	0.825	41	61.056	1.234	91	112.217	0.867	141	151.822	0.739
6.0	9.966	0.825	42	62.290	1.223	92	113.084	0.862	142	152.561	0.737
6.5	10.791	0.823	43	63.513	1.211	93	113.946	0.858	143	153.298	0.736
7.0	11.614	0.821	44	64.724	1.201	94	114.804	0.854	144	154.034	0.735
7.5	12.435	0.820	45	65.925	1.189	95	115.658	0.851	145	154.769	0.734
8.0	13.255	0.818	46	67.114	1.179	96	116.509	0.846	146	155.503	0.733
8.5	14.073	0.817	47	68.293	1.169	97	117.355	0.843	147	156.236	0.731
9.0	14.890	0.814	48	69.462	1.158	98	118.198	0.839	148	156.967	0.730
9.5	15.704	0.811	49	70.620	1.148	99	119.037	0.836	149	157.697	0.730
10.0	16.515	0.810	50	71.768	1.138	100	119.873	0.832	150	158.427	0.729
10.5	17.325	0.808	51	72.906	1.128	101	120.705	0.829	151	159.156	0.727
11.0	18.133	0.805	52	74.034	1.119	102	121.534	0.825	152	159.883	0.727
11.5	18.938	0.803	53	75.153	1.110	103	122.359	0.822	153	160.610	0.725
12.0	19.741	0.801	54	76.263	1.100	104	123.181	0.819	154	161.335	0.725
12.5	20.542	0.798	55	77.363	1.091	105	124.000	0.816	155	162.060	0.724
13.0	21.340	0.796	56	78.454	1.082	106	124.816	0.813	156	162.784	0.723
13.5	22.136	0.793	57	79.536	1.074	107	125.629	0.809	157	163.557	0.722
14.0	22.929	0.790	58	80.610	1.066	108	126.438	0.806	158	164.229	0.722
14.5	23.719	0.787	59	81.676	1.058	109	127.244	0.803	159	164.951	0.721
15.0	24.506	0.784	60	82.734	1.050	110	128.047	0.801	160	165.672	0.721
15.5	25.290	0.782	61	83.784	1.041	111	128.848	0.798	161	166.393	0.720
16.0	26.072	0.780	62	84.825	1.034	112	129.646	0.796	162	167.113	0.719
16.5	26.852	0.776	63	85.859	1.026	113	130.442	0.793	163	167.832	0.718
17.0	27.628	0.773	64	86.885	1.018	114	131.235	0.790	164	168.550	0.718
17.5	28.401	0.770	65	87.903	1.011	115	132.025	0.787	165	169.268	0.717
18.0	29.171	0.767	66	88.914	1.004	116	132.812	0.785	166	169.985	0.717
18.5	29.938	0.763	67	89.918	0.997	117	133.597	0.783	167	170.702	0.717
19.0	30.701	0.761	68	90.915	0.990	118	134.380	0.780	168	171.419	0.717
19.5	31.462	0.757	69	91.905	0.984	119	135.160	0.778	169	172.136	0.716
20	32.219	1.505	70	92.889	0.977	120	135.938	0.776	170	172.852	0.716
21	33.724	1.492	71	93.866	0.971	121	136.214	0.773	171	173.568	0.715
22	35.216	1.479	72	94.837	0.964	122	137.487	0.771	172	174.283	0.715
23	36.695	1.465	73	95.801	0.958	123	138.258	0.769	173	174.998	0.715
24	38.160	1.452	74	96.759	0.952	124	139.027	0.767	174	175.713	0.715
25	39.612	1.438	75	97.711	0.946	125	139.794	0.765	175	176.428	0.715
26	41.050	1.426	76	98.657	0.941	126	140.559	0.763	176	177.143	0.714
27	42.476	1.412	77	99.598	0.934	127	141.322	0.761	177	177.857	0.714
28	43.888	1.398	78	100.532	0.929	128	142.083	0.759	178	178.571	0.715
29	45.286	1.385	79	101.461	0.924	129	142.842	0.757	179	179.286	0.714
30	46.671		80	102.385		130	143.599		180	180.000	
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ

$$E = M + e \sin E.$$

$e = 0.41$

M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	0.847	30	47.250	1.379	80	102.898	0.914	130	143.855	0.751
0.5	0.847	0.848	31	48.629	1.365	81	103.812	0.908	131	144.606	0.749
1.0	1.695	0.847	32	49.994	1.351	82	104.720	0.903	132	145.355	0.747
1.5	2.542	0.847	33	51.345	1.337	83	105.623	0.899	133	146.102	0.745
2.0	3.389	0.846	34	52.682	1.324	84	106.522	0.893	134	146.847	0.744
2.5	4.235	0.845	35	54.006	1.311	85	107.415	0.888	135	147.591	0.742
3.0	5.080	0.845	36	55.317	1.298	86	108.303	0.884	136	148.333	0.740
3.5	5.925	0.844	37	56.615	1.285	87	109.187	0.879	137	149.073	0.739
4.0	6.769	0.842	38	57.900	1.273	88	110.066	0.874	138	149.812	0.738
4.5	7.611	0.842	39	59.173	1.259	89	110.940	0.870	139	150.550	0.736
5.0	8.453	0.841	40	60.432	1.248	90	111.810	0.866	140	151.286	0.735
5.5	9.294	0.839	41	61.680	1.235	91	112.676	0.862	141	152.021	0.734
6.0	10.133	0.837	42	62.915	1.224	92	113.538	0.856	142	152.755	0.732
6.5	10.970	0.836	43	64.139	1.211	93	114.394	0.853	143	153.487	0.730
7.0	11.806	0.835	44	65.350	1.202	94	115.247	0.849	144	154.217	0.730
7.5	12.641	0.833	45	66.552	1.189	95	116.096	0.846	145	154.947	0.729
8.0	13.474	0.831	46	67.741	1.178	96	116.942	0.841	146	155.676	0.728
8.5	14.305	0.829	47	68.919	1.168	97	117.783	0.838	147	156.404	0.726
9.0	15.134	0.827	48	70.087	1.157	98	118.621	0.834	148	157.130	0.725
9.5	15.961	0.824	49	71.244	1.147	99	119.455	0.830	149	157.855	0.725
10.0	16.785	0.821	50	72.391	1.137	100	120.285	0.827	150	158.580	0.723
10.5	17.606	0.819	51	73.528	1.126	101	121.112	0.824	151	159.303	0.722
11.0	18.425	0.817	52	74.654	1.116	102	121.936	0.820	152	160.025	0.722
11.5	19.242	0.814	53	75.770	1.108	103	122.756	0.816	153	160.747	0.720
12.0	20.056	0.812	54	76.878	1.097	104	123.572	0.814	154	161.467	0.720
12.5	20.868	0.809	55	77.975	1.089	105	124.386	0.811	155	162.187	0.719
13.0	21.677	0.806	56	79.064	1.080	106	125.197	0.808	156	162.906	0.718
13.5	22.483	0.804	57	80.144	1.071	107	126.005	0.804	157	163.624	0.717
14.0	23.287	0.800	58	81.215	1.063	108	126.809	0.800	158	164.341	0.717
14.5	24.087	0.798	59	82.278	1.054	109	127.609	0.798	159	165.058	0.716
15.0	24.885	0.794	60	83.332	1.047	110	128.407	0.796	160	165.774	0.715
15.5	25.679	0.792	61	84.379	1.037	111	129.203	0.793	161	166.489	0.715
16.0	26.471	0.789	62	85.416	1.030	112	129.996	0.790	162	167.204	0.714
16.5	27.260	0.785	63	86.446	1.022	113	130.786	0.788	163	167.918	0.713
17.0	28.045	0.782	64	87.468	1.015	114	131.574	0.785	164	168.631	0.713
17.5	28.827	0.779	65	88.483	1.007	115	132.359	0.782	165	169.344	0.712
18.0	29.606	0.775	66	89.490	1.000	116	133.141	0.779	166	170.056	0.712
18.5	30.381	0.772	67	90.490	0.993	117	133.920	0.777	167	170.768	0.712
19.0	31.153	0.768	68	91.483	0.986	118	134.697	0.775	168	171.480	0.712
19.5	31.921	0.765	69	92.469	0.980	119	135.472	0.773	169	172.192	0.711
20	32.686	1.520	70	93.449	0.973	120	136.245	0.771	170	172.903	0.711
21	34.206	1.506	71	94.422	0.966	121	137.016	0.769	171	173.614	0.710
22	35.712	1.492	72	95.388	0.959	122	137.785	0.766	172	174.324	0.710
23	37.204	1.478	73	96.347	0.953	123	138.551	0.764	173	175.034	0.709
24	38.682	1.463	74	97.300	0.948	124	139.315	0.762	174	175.743	0.710
25	40.145	1.449	75	98.248	0.941	125	140.077	0.759	175	176.453	0.710
26	41.594	1.436	76	99.189	0.936	126	140.836	0.757	176	177.163	0.709
27	43.030	1.421	77	100.125	0.930	127	141.593	0.756	177	177.872	0.709
28	44.451	1.407	78	101.055	0.924	128	142.349	0.754	178	178.581	0.710
29	45.858	1.392	79	101.979	0.919	129	143.103	0.752	179	179.291	0.709
30	47.250		80	102.898		130	143.855		180	180.000	
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ

$$E = M + e \sin E.$$

$e = 0.42$

M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	0.862	30	47.838	1.385	80	103.408	0.908	130	144.108	0.745
0.5	0.862	0.861	31	49.223	1.371	81	104.316	0.904	131	144.853	0.743
1.0	1.723	0.861	32	50.594	1.356	82	105.220	0.898	132	145.596	0.742
1.5	2.584	0.861	33	51.950	1.342	83	106.118	0.894	133	146.338	0.741
2.0	3.445	0.861	34	53.292	1.328	84	107.012	0.888	134	147.079	0.738
2.5	4.306	0.860	35	54.620	1.315	85	107.900	0.883	135	147.817	0.737
3.0	5.166	0.860	36	55.935	1.301	86	108.783	0.879	136	148.554	0.736
3.5	6.026	0.859	37	57.236	1.287	87	109.662	0.874	137	149.290	0.734
4.0	6.885	0.857	38	58.523	1.275	88	110.536	0.869	138	150.024	0.732
4.5	7.742	0.855	39	59.798	1.261	89	111.405	0.864	139	150.756	0.731
5.0	8.597	0.855	40	61.059	1.249	90	112.269	0.861	140	151.487	0.730
5.5	9.452	0.853	41	62.308	1.237	91	113.130	0.857	141	152.217	0.728
6.0	10.305	0.852	42	63.545	1.223	92	113.987	0.852	142	152.945	0.727
6.5	11.157	0.850	43	64.768	1.212	93	114.839	0.847	143	153.672	0.726
7.0	12.007	0.847	44	65.980	1.201	94	115.686	0.844	144	154.398	0.725
7.5	12.854	0.845	45	67.181	1.189	95	116.530	0.841	145	155.123	0.724
8.0	13.699	0.843	46	68.370	1.178	96	117.371	0.836	146	155.847	0.723
8.5	14.542	0.842	47	69.548	1.166	97	118.207	0.832	147	156.570	0.721
9.0	15.384	0.839	48	70.714	1.156	98	119.039	0.828	148	157.291	0.720
9.5	16.223	0.836	49	71.870	1.145	99	119.867	0.826	149	158.011	0.719
10.0	17.059	0.834	50	73.015	1.135	100	120.693	0.823	150	158.730	0.718
10.5	17.893	0.832	51	74.150	1.124	101	121.516	0.818	151	159.448	0.718
11.0	18.725	0.829	52	75.274	1.114	102	122.334	0.814	152	160.166	0.717
11.5	19.554	0.826	53	76.388	1.105	103	122.148	0.811	153	160.883	0.715
12.0	20.380	0.824	54	77.493	1.095	104	123.959	0.809	154	161.598	0.714
12.5	21.204	0.820	55	78.588	1.086	105	124.768	0.806	155	162.312	0.714
13.0	22.024	0.817	56	79.674	1.077	106	125.574	0.802	156	163.026	0.713
13.5	22.841	0.814	57	80.751	1.068	107	126.376	0.799	157	163.739	0.712
14.0	23.655	0.811	58	81.819	1.059	108	127.175	0.795	158	164.451	0.712
14.5	24.466	0.808	59	82.878	1.051	109	127.970	0.793	159	165.163	0.711
15.0	25.274	0.805	60	83.929	1.043	110	128.763	0.790	160	165.874	0.710
15.5	26.079	0.801	61	84.972	1.034	111	129.553	0.788	161	166.584	0.710
16.0	26.880	0.798	62	86.006	1.026	112	130.341	0.785	162	167.294	0.709
16.5	27.678	0.794	63	87.032	1.018	113	131.126	0.783	163	168.003	0.708
17.0	28.472	0.791	64	88.050	1.011	114	131.909	0.780	164	168.711	0.708
17.5	29.263	0.788	65	89.061	1.003	115	132.689	0.777	165	169.419	0.707
18.0	30.051	0.784	66	90.064	0.996	116	133.466	0.774	166	170.126	0.707
18.5	30.835	0.780	67	91.060	0.989	117	134.240	0.772	167	170.833	0.707
19.0	31.615	0.776	68	92.049	0.982	118	135.012	0.770	168	171.540	0.707
19.5	32.391	0.773	69	93.031	0.975	119	135.782	0.768	169	172.247	0.706
20	33.164	1.535	70	94.006	0.968	120	136.550	0.765	170	172.953	0.706
21	34.699	1.520	71	94.974	0.961	121	137.315	0.763	171	173.659	0.705
22	36.219	1.505	72	95.935	0.955	122	137.078	0.761	172	174.364	0.705
23	37.724	1.490	73	96.890	0.949	123	138.839	0.759	173	175.069	0.704
24	39.214	1.474	74	97.839	0.942	124	138.598	0.757	174	175.773	0.705
25	40.688	1.460	75	98.781	0.937	125	140.355	0.754	175	176.478	0.705
26	42.148	1.445	76	99.718	0.931	126	141.109	0.752	176	177.183	0.704
27	43.593	1.430	77	100.649	0.925	127	141.861	0.751	177	177.887	0.704
28	45.023	1.415	78	101.574	0.920	128	142.612	0.749	178	178.591	0.705
29	46.438	1.400	79	102.494	0.914	129	143.361	0.747	179	179.296	0.704
30	47.838		80	103.408		130	144.108		180	180.000	
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ

$$E = M + e \sin E.$$

$e = 0.43$											
M	*E*	*Δ*	*M*	*E*	*Δ*	*M*	*E*	*Δ*	*M*	*E*	*Δ*
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	0.877	30	48.433	1.392	80	103.914	0.903	130	144.357	0.740
0.5	0.877	0.877	31	49.825	1.377	81	104.817	0.899	131	145.097	0.738
1.0	1.754	0.876	32	51.202	1.362	82	105.716	0.893	132	145.835	0.737
1.5	2.630	0.876	33	52.564	1.345	83	106.609	0.888	133	146.572	0.736
2.0	3.506	0.876	34	53.909	1.331	84	107.497	0.883	134	147.308	0.734
2.5	4.382	0.875	35	55.240	1.318	85	108.380	0.879	135	148.042	0.732
3.0	5.257	0.875	36	56.558	1.304	86	109.259	0.874	136	148.774	0.730
3.5	6.132	0.873	37	57.862	1.289	87	110.133	0.869	137	149.504	0.729
4.0	7.005	0.871	38	59.151	1.277	88	111.002	0.864	138	150.233	0.727
4.5	7.876	0.870	39	60.428	1.262	89	111.866	0.859	139	150.960	0.726
5.0	8.746	0.869	40	61.690	1.250	90	112.725	0.855	140	151.686	0.725
5.5	9.615	0.867	41	62.940	1.238	91	113.580	0.851	141	152.411	0.723
6.0	10.482	0.865	42	64.178	1.224	92	114.431	0.847	142	153.134	0.722
6.5	11.347	0.864	43	65.402	1.212	93	115.278	0.843	143	153.856	0.721
7.0	12.211	0.862	44	66.614	1.199	94	116.121	0.839	144	154.577	0.720
7.5	13.073	0.860	45	67.813	1.188	95	116.960	0.835	145	155.297	0.718
8.0	13.933	0.858	46	69.001	1.177	96	117.795	0.831	146	156.015	0.718
8.5	14.791	0.854	47	70.178	1.165	97	118.626	0.827	147	156.733	0.716
9.0	15.645	0.852	48	71.343	1.154	98	119.453	0.823	148	157.449	0.715
9.5	16.497	0.849	49	72.497	1.143	99	120.276	0.820	149	158.164	0.714
10.0	17.346	0.846	50	73.640	1.133	100	121.096	0.817	150	158.878	0.714
10.5	18.192	0.843	51	74.773	1.122	101	121.913	0.813	151	159.592	0.712
11.0	19.035	0.841	52	75.895	1.111	102	122.726	0.810	152	160.304	0.712
11.5	19.876	0.838	53	77.006	1.102	103	123.536	0.807	153	161.016	0.710
12.0	20.714	0.835	54	78.108	1.093	104	124.343	0.803	154	161.726	0.710
12.5	21.549	0.832	55	79.201	1.082	105	125.146	0.800	155	162.436	0.708
13.0	22.381	0.828	56	80.283	1.074	106	125.946	0.797	156	163.144	0.708
13.5	23.209	0.825	57	81.357	1.065	107	126.743	0.794	157	163.852	0.707
14.0	24.034	0.822	58	82.422	1.055	108	127.537	0.790	158	164.559	0.707
14.5	24.856	0.818	59	83.477	1.047	109	128.327	0.788	159	165.266	0.706
15.0	25.674	0.815	60	84.524	1.039	110	129.115	0.785	160	165.972	0.705
15.5	26.489	0.811	61	85.563	1.031	111	129.900	0.783	161	166.677	0.705
16.0	27.300	0.807	62	86.594	1.022	112	130.683	0.780	162	167.382	0.704
16.5	28.107	0.804	63	87.616	1.014	113	131.463	0.777	163	168.086	0.704
17.0	28.911	0.800	64	88.630	1.007	114	132.240	0.774	164	168.790	0.703
17.5	29.711	0.796	65	89.637	0.999	115	133.014	0.772	165	169.493	0.702
18.0	30.507	0.792	66	90.636	0.991	116	133.786	0.770	166	170.195	0.702
18.5	31.299	0.789	67	91.627	0.984	117	134.556	0.767	167	170.897	0.702
19.0	32.088	0.784	68	92.611	0.978	118	135.323	0.764	168	171.599	0.702
19.5	32.872	0.781	69	93.589	0.971	119	136.087	0.762	169	172.301	0.701
20	33.653	1.550	70	94.560	0.963	120	136.849	0.760	170	173.002	0.701
21	35.203	1.534	71	95.523	0.957	121	137.609	0.758	171	173.703	0.700
22	36.737	1.517	72	96.480	0.950	122	138.367	0.756	172	174.403	0.700
23	38.254	1.502	73	97.430	0.944	123	139.123	0.754	173	175.103	0.700
24	39.756	1.485	74	98.374	0.938	124	139.877	0.752	174	175.803	0.700
25	41.241	1.471	75	99.312	0.931	125	140.629	0.750	175	176.503	0.700
26	42.712	1.454	76	100.243	0.926	126	141.379	0.747	176	177.203	0.699
27	44.166	1.438	77	101.169	0.921	127	142.126	0.745	177	177.902	0.699
28	45.604	1.423	78	102.090	0.915	128	142.871	0.744	178	178.601	0.700
29	47.027	1.406	79	103.005	0.909	129	143.615	0.742	179	179.301	0.699
30	48.433		80	103.914		130	144.357		180	180.000	
M	*E*	*Δ*	*M*	*E*	*Δ*	*M*	*E*	*Δ*	*M*	*E*	*Δ*

$$E = M + e \sin E.$$

M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ
$e = 0.44$											
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	0.893	30	49.037	1.397	80	104.416	0.899	130	144.603	0.735
0.5	0.893	0.893	31	50.434	1.382	81	105.315	0.894	131	145.338	0.733
1.0	1.786	0.892	32	51.816	1.366	82	106.209	0.888	132	146.071	0.732
1.5	2.678	0.892	33	53.182	1.350	83	107.097	0.882	133	146.803	0.730
2.0	3.570	0.891	34	54.532	1.335	84	107.979	0.878	134	147.533	0.728
2.5	4.461	0.890	35	55.867	1.321	85	108.857	0.873	135	148.261	0.727
3.0	5.351	0.889	36	57.188	1.306	86	109.730	0.869	136	148.988	0.725
3.5	6.240	0.888	37	58.494	1.291	87	110.599	0.864	137	149.713	0.724
4.0	7.128	0.887	38	59.785	1.278	88	111.463	0.859	138	150.437	0.723
4.5	8.015	0.885	39	61.063	1.263	89	112.322	0.854	139	151.160	0.722
5.0	8.900	0.884	40	62.326	1.251	90	113.176	0.850	140	151.882	0.720
5.5	9.784	0.882	41	63.577	1.237	91	114.026	0.846	141	152.602	0.718
6.0	10.666	0.880	42	64.814	1.224	92	114.872	0.842	142	153.320	0.717
6.5	11.546	0.878	43	66.038	1.211	93	115.714	0.838	143	154.037	0.716
7.0	12.424	0.875	44	67.249	1.199	94	116.552	0.833	144	154.753	0.715
7.5	13.299	0.873	45	68.448	1.186	95	117.385	0.830	145	155.468	0.714
8.0	14.172	0.871	46	69.634	1.175	96	118.215	0.826	146	156.182	0.712
8.5	15.043	0.868	47	70.809	1.164	97	119.041	0.822	147	156.894	0.712
9.0	15.911	0.865	48	71.973	1.152	98	119.863	0.818	148	157.606	0.710
9.5	16.776	0.863	49	73.125	1.141	99	120.681	0.815	149	158.316	0.709
10.0	17.639	0.859	50	74.266	1.130	100	121.496	0.811	150	159.025	0.708
10.5	18.998	0.857	51	75.396	1.120	101	122.307	0.808	151	159.733	0.707
11.0	19.355	0.854	52	76.516	1.109	102	123.115	0.805	152	160.440	0.707
11.5	20.209	0.850	53	77.625	1.099	103	123.920	0.801	153	161.147	0.706
12.0	21.059	0.847	54	78.724	1.089	104	124.721	0.798	154	161.853	0.704
12.5	21.906	0.843	55	79.813	1.079	105	125.519	0.795	155	162.557	0.704
13.0	22.749	0.839	56	80.892	1.070	106	126.314	0.792	156	163.261	0.703
13.5	23.588	0.836	57	81.962	1.061	107	127.106	0.789	157	163.964	0.702
14.0	24.424	0.832	58	83.023	1.052	108	127.895	0.785	158	164.666	0.702
14.5	25.256	0.829	59	84.075	1.043	109	128.680	0.782	159	165.368	0.701
15.0	26.085	0.825	60	85.118	1.035	110	129.462	0.780	160	166.069	0.701
15.5	26.910	0.821	61	86.153	1.027	111	130.242	0.778	161	166.770	0.700
16.0	27.731	0.817	62	87.180	1.018	112	131.020	0.775	162	167.470	0.699
16.5	28.548	0.813	63	88.198	1.010	113	131.795	0.772	163	168.169	0.698
17.0	29.361	0.808	64	89.208	1.002	114	132.567	0.769	164	168.867	0.699
17.5	30.169	0.805	65	90.210	0.995	115	133.336	0.767	165	169.566	0.698
18.0	30.974	0.801	66	91.205	0.987	116	134.103	0.764	166	170.264	0.697
18.5	31.775	0.797	67	92.192	0.979	117	134.867	0.762	167	170.961	0.696
19.0	32.572	0.793	68	93.171	0.973	118	135.629	0.759	168	171.657	0.697
19.5	33.365	0.788	69	94.144	0.966	119	136.388	0.757	169	172.354	0.696
20	34.153	1.565	70	95.110	0.959	120	137.145	0.755	170	173.050	0.696
21	35.718	1.547	71	96.069	0.953	121	137.900	0.753	171	173.746	0.696
22	37.265	1.530	72	97.022	0.945	122	138.653	0.751	172	174.442	0.695
23	38.795	1.514	73	97.967	0.939	123	139.404	0.749	173	175.137	0.695
24	40.309	1.496	74	98.906	0.933	124	140.153	0.747	174	175.832	0.695
25	41.805	1.480	75	99.839	0.927	125	140.900	0.745	175	176.527	0.695
26	43.285	1.463	76	100.766	0.921	126	141.645	0.742	176	177.222	0.695
27	44.748	1.446	77	101.687	0.915	127	142.387	0.740	177	177.917	0.695
28	46.194	1.430	78	102.602	0.910	128	143.127	0.739	178	178.612	0.694
29	47.624	1.413	79	103.512	0.904	129	143.866	0.737	179	179.306	0.694
30	49.037		80	104.416		130	144.603		180	180.000	
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ

$$E = M + e \sin E.$$

$e = 0.45$

M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	0.909	30	49.649	1.403	80	104.914	0.894	130	144.846	0.730
0.5	0.909	0.909	31	51.052	1.386	81	105.808	0.889	131	145.576	0.728
1.0	1.818	0.908	32	52.438	1.370	82	106.697	0.883	132	146.304	0.727
1.5	2.726	0.908	33	53.808	1.354	83	107.580	0.877	133	147.031	0.725
2.0	3.634	0.908	34	55.162	1.338	84	108.457	0.873	134	147.756	0.723
2.5	4.542	0.906	35	56.500	1.323	85	109.330	0.868	135	148.479	0.722
3.0	5.448	0.905	36	57.823	1.308	86	110.198	0.863	136	149.201	0.720
3.5	6.353	0.904	37	59.131	1.293	87	111.061	0.859	137	149.921	0.720
4.0	7.257	0.902	38	60.424	1.278	88	111.920	0.854	138	150.641	0.718
4.5	8.159	0.901	39	61.702	1.264	89	112.774	0.849	139	151.359	0.716
5.0	9.060	0.899	40	62.966	1.250	90	113.623	0.845	140	152.075	0.715
5.5	9.959	0.897	41	64.216	1.237	91	114.468	0.841	141	152.790	0.713
6.0	10.856	0.895	42	65.453	1.222	92	115.309	0.836	142	153.503	0.712
6.5	11.751	0.892	43	66.675	1.212	93	116.145	0.833	143	154.215	0.711
7.0	12.643	0.890	44	67.887	1.197	94	116.978	0.828	144	154.926	0.710
7.5	13.533	0.888	45	69.084	1.185	95	117.806	0.825	145	155.636	0.709
8.0	14.421	0.885	46	70.269	1.173	96	118.631	0.821	146	156.345	0.708
8.5	15.306	0.882	47	71.442	1.161	97	119.452	0.816	147	157.053	0.707
9.0	16.188	0.879	48	72.603	1.150	98	120.268	0.813	148	157.760	0.705
9.5	17.067	0.876	49	73.753	1.139	99	121.081	0.810	149	158.465	0.704
10.0	17.943	0.873	50	74.892	1.128	100	121.891	0.806	150	159.169	0.703
10.5	18.816	0.869	51	76.020	1.116	101	122.697	0.803	151	159.872	0.703
11.0	19.685	0.866	52	77.136	1.106	102	123.500	0.800	152	160.575	0.702
11.5	20.551	0.862	53	78.242	1.096	103	124.300	0.796	153	161.277	0.701
12.0	21.413	0.859	54	79.338	1.086	104	125.096	0.793	154	161.978	0.699
12.5	22.272	0.855	55	80.424	1.076	105	125.899	0.790	155	162.677	0.699
13.0	23.127	0.851	56	81.500	1.067	106	126.679	0.787	156	163.376	0.698
13.5	23.978	0.847	57	82.567	1.057	107	127.466	0.783	157	164.074	0.698
14.0	24.825	0.843	58	83.624	1.048	108	128.249	0.780	158	164.772	0.697
14.5	25.668	0.839	59	84.672	1.038	109	129.029	0.777	159	165.469	0.696
15.0	26.507	0.835	60	85.710	1.031	110	129.806	0.775	160	166.165	0.696
15.5	27.342	0.831	61	86.741	1.023	111	130.581	0.773	161	166.861	0.695
16.0	28.173	0.827	62	87.764	1.013	112	131.354	0.769	162	167.556	0.694
16.5	29.000	0.822	63	88.777	1.006	113	132.123	0.767	163	168.250	0.694
17.0	29.822	0.818	64	89.783	0.998	114	132.890	0.764	164	168.944	0.694
17.5	30.640	0.814	65	90.781	0.990	115	133.654	0.762	165	169.638	0.693
18.0	31.454	0.809	66	91.771	0.983	116	134.416	0.759	166	170.331	0.692
18.5	32.263	0.805	67	92.754	0.975	117	135.175	0.757	167	171.023	0.692
19.0	33.068	0.801	68	93.729	0.968	118	135.932	0.754	168	171.715	0.692
19.5	33.869	0.796	69	94.697	0.961	119	136.686	0.752	169	172.407	0.691
20	34.665	1.578	70	95.658	0.954	120	137.438	0.750	170	173.098	0.691
21	36.243	1.561	71	96.612	0.947	121	138.188	0.748	171	173.789	0.691
22	37.804	1.543	72	97.559	0.941	122	138.936	0.746	172	174.480	0.691
23	39.347	1.525	73	98.500	0.934	123	139.682	0.744	173	175.171	0.690
24	40.872	1.507	74	99.434	0.928	124	140.426	0.742	174	175.861	0.690
25	42.379	1.489	75	100.362	0.922	125	141.168	0.740	175	176.551	0.690
26	43.868	1.471	76	101.284	0.916	126	141.908	0.737	176	177.241	0.690
27	45.339	1.454	77	102.200	0.911	127	142.645	0.735	177	177.931	0.690
28	46.793	1.437	78	103.111	0.904	128	143.380	0.734	178	178.621	0.690
29	48.230	1.419	79	104.015	0.899	129	144.114	0.732	179	179.311	0.689
30	49.649		80	104.914		130	144.846		180	180.000	
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ

$$E = M + e \sin E.$$

$e = 0.46$											
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	0.926	30	50.269	1.408	80	105.408	0.889	130	145.085	0.726
0.5	0.926	0.926	31	51.677	1.391	81	106.297	0.884	131	145.811	0.723
1.0	1.852	0.925	32	53.068	1.373	82	107.181	0.878	132	146.534	0.722
1.5	2.777	0.924	33	54.441	1.357	83	108.059	0.872	133	147.256	0.720
2.0	3.701	0.924	34	55.798	1.341	84	108.931	0.867	134	147.976	0.718
2.5	4.625	0.923	35	57.139	1.325	85	109.798	0.863	135	148.694	0.717
3.0	5.548	0.922	36	58.464	1.309	86	110.661	0.858	136	149.411	0.716
3.5	6.470	0.920	37	59.773	1.294	87	111.519	0.854	137	150.127	0.715
4.0	7.390	0.919	38	61.067	1.278	88	112.373	0.849	138	150.842	0.713
4.5	8.309	0.916	39	62.345	1.264	89	113.222	0.844	139	151.555	0.711
5.0	9.225	0.915	40	63.609	1.250	90	114.066	0.839	140	152.266	0.710
5.5	10.140	0.913	41	64.859	1.236	91	114.905	0.835	141	152.976	0.708
6.0	11.053	0.910	42	66.095	1.224	92	115.740	0.832	142	153.684	0.707
6.5	11.963	0.908	43	67.319	1.208	93	116.572	0.828	143	154.391	0.706
7.0	12.871	0.905	44	68.527	1.196	94	117.400	0.823	144	155.097	0.705
7.5	13.776	0.903	45	69.723	1.182	95	118.223	0.820	145	155.802	0.705
8.0	14.679	0.899	46	70.905	1.172	96	119.043	0.815	146	156.507	0.703
8.5	15.578	0.896	47	72.077	1.159	97	119.858	0.811	147	157.210	0.702
9.0	16.474	0.893	48	73.236	1.147	98	120.669	0.808	148	157.912	0.700
9.5	17.367	0.890	49	74.383	1.136	99	121.477	0.805	149	158.612	0.700
10.0	18.257	0.886	50	75.519	1.124	100	122.282	0.801	150	159.312	0.698
10.5	19.143	0.882	51	76.643	1.114	101	123.083	0.798	151	160.010	0.698
11.0	20.025	0.879	52	77.757	1.103	102	123.881	0.795	152	160.708	0.697
11.5	20.904	0.875	53	78.860	1.092	103	124.676	0.791	153	161.405	0.696
12.0	21.779	0.871	54	79.952	1.082	104	125.467	0.787	154	162.101	0.695
12.5	22.650	0.866	55	81.034	1.073	105	126.254	0.785	155	162.796	0.694
13.0	23.516	0.863	56	82.107	1.062	106	127.039	0.782	156	163.490	0.694
13.5	24.379	0.858	57	83.169	1.053	107	127.821	0.778	157	164.184	0.693
14.0	25.237	0.854	58	84.222	1.042	108	128.599	0.775	158	164.877	0.692
14.5	26.091	0.850	59	85.266	1.035	109	129.374	0.772	159	165.569	0.691
15.0	26.941	0.846	60	86.301	1.026	110	130.146	0.770	160	166.260	0.691
15.5	27.787	0.841	61	87.327	1.018	111	130.916	0.768	161	166.951	0.690
16.0	28.628	0.837	62	88.345	1.010	112	131.684	0.765	162	167.641	0.689
16.5	29.465	0.831	63	89.355	1.001	113	132.449	0.762	163	168.330	0.690
17.0	30.296	0.827	64	90.356	0.993	114	133.211	0.759	164	169.020	0.689
17.5	31.123	0.822	65	91.349	0.985	115	133.970	0.756	165	169.709	0.688
18.0	31.945	0.818	66	92.334	0.978	116	134.726	0.754	166	170.397	0.688
18.5	32.763	0.813	67	93.312	0.970	117	135.480	0.752	167	171.085	0.687
19.0	33.576	0.808	68	94.282	0.964	118	136.232	0.749	168	171.772	0.687
19.5	34.384	0.804	69	95.246	0.956	119	136.981	0.746	169	172.459	0.686
20	35.188	1.594	70	96.202	0.949	120	137.727	0.744	170	173.145	0.686
21	36.782	1.574	71	97.151	0.943	121	138.471	0.743	171	173.831	0.687
22	38.356	1.554	72	98.094	0.935	122	139.214	0.741	172	174.518	0.686
23	39.910	1.535	73	99.029	0.929	123	139.955	0.739	173	175.204	0.685
24	41.445	1.517	74	99.958	0.923	124	140.694	0.737	174	175.889	0.686
25	42.962	1.498	75	100.881	0.917	125	141.431	0.735	175	176.575	0.685
26	44.460	1.480	76	101.798	0.911	126	142.166	0.733	176	177.260	0.685
27	45.940	1.461	77	102.709	0.906	127	142.899	0.731	177	177.945	0.686
28	47.401	1.443	78	103.615	0.899	128	143.630	0.728	178	178.631	0.685
29	48.844	1.423	79	104.514	0.894	129	144.358	0.727	179	179.316	0.684
30	50.269		80	105.408		130	145.085		180	180.000	
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ

$$E = M + e \sin E.$$

$e = 0.47$

M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	0.944	30	50.897	1.412	80	105.899	0.883	130	145.322	0.721
0.5	0.944	0.943	31	52.309	1.395	81	106.782	0.878	131	146.043	0.719
1.0	1.887	0.942	32	53.704	1.377	82	107.660	0.873	132	146.762	0.717
1.5	2.829	0.942	33	55.081	1.359	83	108.533	0.868	133	147.479	0.715
2.0	3.771	0.941	34	56.440	1.343	84	109.401	0.862	134	148.194	0.713
2.5	4.712	0.940	35	57.783	1.326	85	110.263	0.857	135	148.907	0.712
3.0	5.652	0.939	36	59.109	1.311	86	111.120	0.853	136	149.619	0.711
3.5	6.591	0.937	37	60.420	1.294	87	111.973	0.848	137	150.330	0.710
4.0	7.528	0.935	38	61.714	1.278	88	112.821	0.844	138	151.040	0.708
4.5	8.463	0.933	39	62.992	1.263	89	113.665	0.839	139	151.748	0.706
5.0	9.396	0.932	40	64.255	1.250	90	114.504	0.835	140	152.454	0.705
5.5	10.328	0.929	41	65.505	1.235	91	115.339	0.830	141	153.159	0.704
6.0	11.257	0.926	42	66.740	1.221	92	116.169	0.826	142	153.863	0.703
6.5	12.183	0.923	43	67.961	1.208	93	116.995	0.822	143	154.566	0.701
7.0	13.106	0.921	44	69.169	1.194	94	117.817	0.818	144	155.267	0.700
7.5	14.027	0.918	45	70.363	1.180	95	118.635	0.815	145	155.967	0.700
8.0	14.945	0.914	46	71.543	1.168	96	119.450	0.811	146	156.667	0.698
8.5	15.859	0.911	47	72.711	1.157	97	120.261	0.806	147	157.365	0.697
9.0	16.770	0.908	48	73.868	1.145	98	121.067	0.802	148	158.062	0.696
9.5	17.678	0.904	49	75.013	1.133	99	121.869	0.800	149	158.758	0.694
10.0	18.582	0.899	50	76.146	1.120	100	122.669	0.795	150	159.452	0.694
10.5	19.481	0.895	51	77.266	1.110	101	123.464	0.793	151	160.146	0.693
11.0	20.376	0.892	52	78.376	1.100	102	124.257	0.790	152	160.839	0.692
11.5	21.268	0.888	53	79.476	1.089	103	125.047	0.786	153	161.531	0.691
12.0	22.156	0.883	54	80.565	1.078	104	125.833	0.783	154	162.222	0.691
12.5	23.039	0.879	55	81.643	1.069	105	126.616	0.779	155	162.913	0.690
13.0	23.918	0.874	56	82.712	1.058	106	127.395	0.776	156	163.603	0.689
13.5	24.792	0.870	57	83.770	1.049	107	128.171	0.773	157	164.292	0.688
14.0	25.662	0.865	58	84.819	1.040	108	128.944	0.770	158	164.980	0.687
14.5	26.527	0.860	59	85.859	1.030	109	129.714	0.768	159	165.667	0.687
15.0	27.387	0.856	60	86.889	1.022	110	130.482	0.765	160	166.354	0.686
15.5	28.243	0.851	61	87.911	1.013	111	131.247	0.762	161	167.040	0.685
16.0	29.094	0.846	62	88.924	1.005	112	132.009	0.760	162	167.725	0.685
16.5	29.940	0.841	63	89.929	0.997	113	132.769	0.757	163	168.410	0.685
17.0	30.781	0.836	64	90.926	0.988	114	133.526	0.753	164	169.095	0.684
17.5	31.617	0.831	65	91.914	0.981	115	134.279	0.751	165	169.779	0.683
18.0	32.448	0.827	66	92.895	0.973	116	135.030	0.750	166	170.462	0.683
18.5	33.275	0.821	67	93.868	0.965	117	135.780	0.748	167	171.145	0.683
19.0	34.096	0.816	68	94.833	0.959	118	136.528	0.745	168	171.828	0.682
19.5	34.912	0.811	69	95.792	0.951	119	137.273	0.742	169	172.510	0.682
20	35.723	1.608	70	96.743	0.944	120	138.015	0.740	170	173.192	0.682
21	37.331	1.586	71	97.687	0.937	121	138.755	0.738	171	173.874	0.681
22	38.917	1.567	72	98.624	0.931	122	139.493	0.735	172	174.555	0.681
23	40.484	1.545	73	99.555	0.924	123	140.228	0.734	173	175.236	0.681
24	42.029	1.526	74	100.479	0.918	124	140.962	0.732	174	175.917	0.681
25	43.555	1.507	75	101.397	0.912	125	141.694	0.730	175	176.598	0.681
26	45.062	1.488	76	102.309	0.906	126	142.424	0.727	176	177.279	0.681
27	46.550	1.468	77	103.215	0.900	127	143.151	0.725	177	177.960	0.680
28	48.018	1.449	78	104.115	0.895	128	143.876	0.724	178	178.640	0.680
29	49.467	1.430	79	105.010	0.889	129	144.600	0.722	179	179.320	0.680
30	50.897		80	105.899		130	145.322		180	180.000	
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ

$$E = M + e \sin E.$$

$e = 0.48$											
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	0.962	30	51.533	1.416	80	106.385	0.878	130	145.556	0.715
0.5	0.962	0.961	31	52.949	1.398	81	107.263	0.873	131	146.271	0.714
1.0	1.923	0.961	32	54.347	1.379	82	108.136	0.868	132	146.985	0.712
1.5	2.884	0.960	33	55.726	1.362	83	109.004	0.862	133	147.697	0.711
2.0	3.844	0.959	34	57.088	1.344	84	109.866	0.857	134	148.408	0.709
2.5	4.803	0.957	35	58.432	1.327	85	110.723	0.852	135	149.117	0.707
3.0	5.760	0.956	36	59.759	1.312	86	111.575	0.847	136	149.824	0.706
3.5	6.716	0.955	37	61.071	1.294	87	112.422	0.843	137	150.530	0.705
4.0	7.671	0.953	38	62.365	1.277	88	113.265	0.839	138	151.235	0.703
4.5	8.624	0.950	39	63.642	1.263	89	114.104	0.834	139	151.938	0.702
5.0	9.574	0.948	40	64.905	1.249	90	114.938	0.830	140	152.640	0.700
5.5	10.522	0.946	41	66.154	1.234	91	115.768	0.825	141	153.340	0.699
6.0	11.468	0.943	42	67.388	1.220	92	116.593	0.821	142	154.039	0.698
6.5	12.411	0.939	43	68.608	1.205	93	117.414	0.817	143	154.737	0.697
7.0	13.350	0.937	44	69.813	1.191	94	118.231	0.813	144	155.434	0.696
7.5	14.287	0.933	45	71.004	1.178	95	119.044	0.809	145	156.130	0.694
8.0	15.220	0.929	46	72.182	1.166	96	119.853	0.805	146	156.824	0.694
8.5	16.149	0.926	47	73.348	1.153	97	120.658	0.801	147	157.518	0.692
9.0	17.075	0.922	48	74.501	1.141	98	121.459	0.798	148	158.210	0.691
9.5	17.997	0.918	49	75.642	1.130	99	122.257	0.795	149	158.901	0.690
10.0	18.915	0.914	50	76.772	1.117	100	123.052	0.791	150	159.591	0.689
10.5	19.829	0.909	51	77.889	1.107	101	123.843	0.788	151	160.280	0.688
11.0	20.738	0.905	52	78.996	1.096	102	124.631	0.784	152	160.968	0.688
11.5	21.643	0.901	53	80.092	1.085	103	125.415	0.781	153	161.656	0.686
12.0	22.544	0.896	54	81.177	1.074	104	126.196	0.777	154	162.342	0.686
12.5	23.440	0.891	55	82.251	1.064	105	126.973	0.774	155	163.028	0.685
13.0	24.331	0.886	56	83.315	1.054	106	127.747	0.771	156	163.713	0.684
13.5	25.217	0.882	57	84.369	1.045	107	128.518	0.769	157	164.397	0.684
14.0	26.099	0.876	58	85.414	1.035	108	129.287	0.765	158	165.081	0.683
14.5	26.975	0.871	59	86.449	1.026	109	130.052	0.762	159	165.764	0.682
15.0	27.846	0.866	60	87.475	1.017	110	130.814	0.760	160	166.446	0.681
15.5	28.712	0.861	61	88.492	1.009	111	131.574	0.757	161	167.127	0.681
16.0	29.573	0.856	62	89.501	1.000	112	132.331	0.755	162	167.808	0.680
16.5	30.429	0.850	63	90.501	0.992	113	133.086	0.752	163	168.488	0.680
17.0	31.279	0.845	64	91.493	0.984	114	133.838	0.749	164	169.168	0.680
17.5	32.124	0.840	65	92.477	0.975	115	134.587	0.747	165	169.848	0.679
18.0	32.964	0.835	66	93.452	0.968	116	135.334	0.744	166	170.527	0.678
18.5	33.799	0.829	67	94.420	0.960	117	136.078	0.742	167	171.205	0.678
19.0	34.628	0.824	68	95.380	0.954	118	136.820	0.739	168	171.883	0.678
19.5	35.452	0.818	69	96.334	0.946	119	137.559	0.737	169	172.561	0.677
20	36.270	1.621	70	97.280	0.939	120	138.296	0.735	170	173.238	0.677
21	37.891	1.599	71	98.219	0.933	121	139.031	0.733	171	173.915	0.676
22	39.490	1.578	72	99.152	0.925	122	139.764	0.731	172	174.591	0.677
23	41.068	1.556	73	100.077	0.920	123	140.495	0.729	173	175.268	0.677
24	42.624	1.535	74	100.997	0.913	124	141.224	0.727	174	175.945	0.676
25	44.159	1.515	75	101.910	0.906	125	141.951	0.725	175	176.621	0.676
26	45.674	1.495	76	102.816	0.901	126	142.676	0.723	176	177.297	0.676
27	47.169	1.474	77	103.717	0.895	127	143.399	0.721	177	177.973	0.676
28	48.643	1.455	78	104.612	0.889	128	144.120	0.719	178	178.649	0.676
29	50.098	1.435	79	105.501	0.884	129	144.839	0.717	179	179.325	0.675
30	51.533		80	106.385		130	145.556		180	180.000	
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ

$$E = M + e \sin E.$$

$e = 0.49$

M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	0.980	30	52.176	1.420	80	106.867	0.873	130	145.787	0.710
0.5	0.980	0.980	31	53.596	1.401	81	107.740	0.868	131	146.497	0.709
1.0	1.960	0.980	32	54.997	1.381	82	108.608	0.862	132	147.206	0.707
1.5	2.940	0.979	33	56.378	1.363	83	109.470	0.857	133	147.913	0.706
2.0	3.919	0.977	34	57.741	1.346	84	110.327	0.852	134	148.619	0.704
2.5	4.896	0.976	35	59.087	1.327	85	111.179	0.847	135	149.323	0.703
3.0	5.872	0.974	36	60.414	1.311	86	112.026	0.842	136	150.026	0.702
3.5	6.846	0.973	37	61.725	1.295	87	112.868	0.838	137	150.728	0.700
4.0	7.819	0.971	38	63.020	1.277	88	113.706	0.833	138	151.428	0.698
4.5	8.790	0.968	39	64.297	1.262	89	114.539	0.829	139	152.126	0.697
5.0	9.758	0.966	40	65.559	1.246	90	115.368	0.824	140	152.823	0.696
5.5	10.724	0.963	41	66.805	1.233	91	116.192	0.821	141	153.519	0.694
6.0	11.687	0.960	42	68.038	1.217	92	117.013	0.816	142	154.213	0.693
6.5	12.647	0.956	43	69.255	1.203	93	117.829	0.812	143	154.906	0.692
7.0	13.603	0.953	44	70.458	1.189	94	118.641	0.807	144	155.598	0.692
7.5	14.556	0.949	45	71.647	1.175	95	119.448	0.804	145	156.290	0.690
8.0	15.505	0.945	46	72.822	1.163	96	120.252	0.800	146	156.980	0.688
8.5	16.450	0.942	47	73.985	1.150	97	121.052	0.796	147	157.668	0.688
9.0	17.392	0.937	48	75.135	1.138	98	121.848	0.793	148	158.356	0.687
9.5	18.329	0.933	49	76.273	1.125	99	122.641	0.789	149	159.043	0.685
10.0	19.262	0.927	50	77.398	1.114	100	123.430	0.786	150	159.728	0.684
10.5	20.189	0.923	51	78.512	1.103	101	124.216	0.783	151	160.412	0.684
11.0	21.112	0.919	52	79.615	1.092	102	124.999	0.779	152	161.096	0.683
11.5	22.031	0.914	53	80.707	1.080	103	125.778	0.776	153	161.779	0.682
12.0	22.945	0.909	54	81.787	1.070	104	126.554	0.772	154	162.461	0.681
12.5	23.854	0.903	55	82.857	1.060	105	127.326	0.769	155	163.142	0.680
13.0	24.757	0.898	56	83.917	1.050	106	128.095	0.767	156	163.822	0.680
13.5	25.655	0.893	57	84.967	1.040	107	128.862	0.763	157	164.502	0.679
14.0	26.548	0.887	58	86.007	1.031	108	129.625	0.761	158	165.181	0.678
14.5	27.435	0.882	59	87.038	1.021	109	130.386	0.757	159	165.859	0.678
15.0	28.317	0.877	60	88.059	1.012	110	131.143	0.755	160	166.537	0.677
15.5	29.194	0.871	61	89.071	1.004	111	131.898	0.752	161	167.214	0.676
16.0	30.065	0.865	62	90.075	0.995	112	132.650	0.749	162	167.890	0.676
16.5	30.930	0.860	63	91.070	0.987	113	133.399	0.747	163	168.566	0.675
17.0	31.790	0.854	64	92.057	0.978	114	134.146	0.744	164	169.241	0.675
17.5	32.644	0.849	65	93.035	0.971	115	134.890	0.742	165	169.916	0.674
18.0	33.493	0.842	66	94.006	0.963	116	135.632	0.740	166	170.590	0.674
18.5	34.335	0.837	67	94.969	0.956	117	136.372	0.737	167	171.264	0.674
19.0	35.172	0.831	68	95.925	0.948	118	137.109	0.734	168	171.938	0.673
19.5	36.003	0.826	69	96.873	0.941	119	137.843	0.732	169	172.611	0.673
20	36.829	1.635	70	97.814	0.934	120	138.575	0.730	170	173.284	0.672
21	38.464	1.610	71	98.748	0.927	121	139.305	0.728	171	173.956	0.672
22	40.074	1.589	72	99.675	0.921	122	140.033	0.726	172	174.628	0.672
23	41.663	1.566	73	100.596	0.914	123	140.759	0.724	173	175.300	0.672
24	43.229	1.544	74	101.510	0.908	124	141.483	0.723	174	175.972	0.672
25	44.773	1.523	75	102.418	0.902	125	142.206	0.720	175	176.644	0.672
26	46.296	1.501	76	103.320	0.895	126	142.926	0.718	176	177.316	0.671
27	47.797	1.480	77	104.215	0.890	127	143.644	0.716	177	177.987	0.671
28	49.277	1.460	78	105.105	0.883	128	144.360	0.714	178	178.658	0.671
29	50.737	1.439	79	105.988	0.879	129	145.074	0.713	179	179.329	0.671
30	52.176		80	106.867		130	145.787		180	180.000	
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ

$E = M + e \sin E.$

$e = 0.50$											
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	1.000	30	52.827	1.423	80	107.345	0.868	130	146.014	0.706
0.5	1.000	1.000	31	54.250	1.403	81	108.213	0.862	131	146.720	0.704
1.0	2.000	0.999	32	55.653	1.383	82	109.075	0.857	132	147.424	0.703
1.5	2.999	0.998	33	57.036	1.364	83	109.932	0.852	133	148.127	0.701
2.0	3.997	0.997	34	58.400	1.346	84	110.784	0.846	134	148.828	0.700
2.5	4.994	0.995	35	59.746	1.328	85	111.630	0.842	135	149.528	0.698
3.0	5.989	0.993	36	61.074	1.310	86	112.472	0.837	136	150.226	0.697
3.5	6.982	0.991	37	62.384	1.294	87	113.309	0.833	137	150.923	0.695
4.0	7.973	0.990	38	63.678	1.277	88	114.142	0.828	138	151.618	0.693
4.5	8.963	0.987	39	64.955	1.260	89	114.970	0.824	139	152.311	0.693
5.0	9.950	0.984	40	66.215	1.245	90	115.794	0.819	140	153.004	0.691
5.5	10.934	0.980	41	67.460	1.229	91	116.613	0.815	141	153.695	0.690
6.0	11.914	0.977	42	68.689	1.215	92	117.428	0.811	142	154.385	0.689
6.5	12.891	0.974	43	69.904	1.200	93	118.239	0.806	143	155.074	0.687
7.0	13.865	0.970	44	71.104	1.186	94	119.045	0.803	144	155.761	0.687
7.5	14.835	0.966	45	72.290	1.173	95	119.848	0.799	145	156.448	0.685
8.0	15.801	0.961	46	73.463	1.160	96	120.647	0.795	146	157.133	0.684
8.5	16.762	0.957	47	74.623	1.146	97	121.442	0.791	147	157.817	0.683
9.0	17.719	0.952	48	75.769	1.134	98	122.233	0.788	148	158.500	0.682
9.5	18.671	0.948	49	76.903	1.121	99	123.021	0.784	149	159.182	0.681
10.0	19.619	0.943	50	78.024	1.110	100	123.805	0.781	150	159.863	0.680
10.5	20.562	0.937	51	79.134	1.099	101	124.586	0.777	151	160.543	0.679
11.0	21.499	0.932	52	80.233	1.087	102	125.363	0.774	152	161.222	0.678
11.5	22.431	0.927	53	81.320	1.076	103	126.137	0.770	153	161.900	0.678
12.0	23.358	0.922	54	82.396	1.066	104	126.907	0.768	154	162.578	0.677
12.5	24.280	0.916	55	83.462	1.055	105	127.675	0.764	155	163.255	0.676
13.0	25.196	0.910	56	84.517	1.045	106	128.439	0.762	156	163.931	0.675
13.5	26.106	0.905	57	85.562	1.036	107	129.201	0.758	157	164.606	0.674
14.0	27.011	0.898	58	86.598	1.026	108	129.959	0.756	158	165.280	0.674
14.5	27.909	0.893	59	87.624	1.016	109	130.715	0.752	159	165.954	0.673
15.0	28.802	0.887	60	88.640	1.007	110	131.467	0.750	160	166.627	0.672
15.5	29.689	0.881	61	89.647	0.999	111	132.217	0.747	161	167.299	0.672
16.0	30.570	0.875	62	90.646	0.990	112	132.964	0.745	162	167.971	0.671
16.5	31.445	0.869	63	91.636	0.982	113	133.709	0.742	163	168.642	0.671
17.0	32.314	0.863	64	92.618	0.974	114	134.451	0.739	164	169.313	0.670
17.5	33.177	0.857	65	93.592	0.965	115	135.190	0.737	165	169.983	0.670
18.0	34.034	0.850	66	94.557	0.958	116	135.927	0.735	166	170.653	0.669
18.5	34.884	0.845	67	95.515	0.951	117	136.662	0.732	167	171.322	0.669
19.0	35.729	0.838	68	96.466	0.943	118	137.394	0.729	168	171.991	0.669
19.5	36.567	0.833	69	97.409	0.936	119	138.123	0.727	169	172.660	0.668
20	37.400	1.647	70	98.345	0.929	120	138.850	0.726	170	173.328	0.668
21	39.047	1.623	71	99.274	0.922	121	139.576	0.724	171	173.996	0.667
22	40.670	1.599	72	100.196	0.915	122	140.300	0.721	172	174.663	0.668
23	42.269	1.576	73	101.111	0.909	123	141.021	0.719	173	175.331	0.668
24	43.845	1.552	74	102.020	0.903	124	141.740	0.717	174	175.999	0.667
25	45.397	1.530	75	102.923	0.896	125	142.457	0.715	175	176.666	0.667
26	46.927	1.507	76	103.819	0.890	126	143.172	0.713	176	177.333	0.667
27	48.434	1.486	77	104.709	0.884	127	143.885	0.711	177	178.000	0.667
28	49.920	1.464	78	105.593	0.879	128	144.596	0.710	178	178.667	0.666
29	51.384	1.443	79	106.472	0.873	129	145.306	0.708	179	179.333	0.667
30	52.827		80	107.345		130	146.014		180	180.000	
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ

$$E = M + e \sin E.$$

$e = 0.51$

M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	1.021	30	53.485	1.425	80	107.819	0.863	130	146.239	0.701
0.5	1.021	1.020	31	54.910	1.405	81	108.682	0.856	131	146.940	0.700
1.0	2.041	1.019	32	56.315	1.384	82	109.538	0.851	132	147.640	0.698
1.5	3.060	1.018	33	57.699	1.365	83	110.389	0.846	133	148.338	0.697
2.0	4.078	1.016	34	59.064	1.346	84	111.235	0.842	134	149.035	0.695
2.5	5.094	1.015	35	60.410	1.327	85	112.077	0.837	135	149.730	0.693
3.0	6.109	1.014	36	61.737	1.310	86	112.914	0.832	136	150.423	0.692
3.5	7.123	1.011	37	63.047	1.292	87	113.746	0.828	137	151.115	0.691
4.0	8.134	1.009	38	64.339	1.274	88	114.574	0.823	138	151.806	0.689
4.5	9.143	1.006	39	65.613	1.260	89	115.397	0.819	139	152.495	0.688
5.0	10.149	1.003	40	66.873	1.242	90	116.216	0.814	140	153.183	0.687
5.5	11.152	0.998	41	68.115	1.227	91	117.030	0.809	141	153.870	0.685
6.0	12.150	0.995	42	69.342	1.212	92	117.839	0.806	142	154.555	0.684
6.5	13.145	0.992	43	70.554	1.197	93	118.645	0.801	143	155.239	0.683
7.0	14.137	0.987	44	71.751	1.183	94	119.446	0.798	144	155.922	0.682
7.5	15.124	0.982	45	72.934	1.170	95	120.244	0.794	145	156.604	0.680
8.0	16.106	0.979	46	74.104	1.156	96	121.038	0.790	146	157.284	0.680
8.5	17.085	0.974	47	75.260	1.142	97	121.828	0.786	147	157.964	0.678
9.0	18.059	0.968	48	76.402	1.130	98	122.614	0.783	148	158.642	0.678
9.5	19.027	0.962	49	77.532	1.117	99	123.397	0.779	149	159.320	0.676
10.0	19.989	0.957	50	78.649	1.106	100	124.176	0.776	150	159.996	0.676
10.5	20.946	0.952	51	79.755	1.094	101	124.952	0.772	151	160.672	0.674
11.0	21.898	0.946	52	80.849	1.083	102	125.724	0.768	152	161.346	0.674
11.5	22.844	0.940	53	81.932	1.071	103	126.492	0.765	153	162.020	0.673
12.0	23.784	0.935	54	83.003	1.062	104	127.257	0.762	154	162.693	0.673
12.5	24.719	0.929	55	84.065	1.050	105	128.019	0.760	155	163.366	0.671
13.0	25.648	0.923	56	85.115	1.040	106	128.779	0.757	156	164.037	0.670
13.5	26.571	0.916	57	86.155	1.031	107	129.536	0.754	157	164.707	0.670
14.0	27.487	0.910	58	87.186	1.021	108	130.290	0.751	158	165.377	0.670
14.5	28.397	0.903	59	88.207	1.011	109	131.041	0.747	159	166.047	0.669
15.0	29.300	0.898	60	89.218	1.002	110	131.788	0.745	160	166.716	0.667
15.5	30.198	0.891	61	90.220	0.994	111	132.533	0.742	161	167.383	0.667
16.0	31.089	0.884	62	91.214	0.985	112	133.275	0.740	162	168.050	0.667
16.5	31.973	0.878	63	92.199	0.977	113	134.015	0.737	163	168.717	0.666
17.0	32.851	0.872	64	93.176	0.969	114	134.752	0.735	164	169.383	0.666
17.5	33.723	0.865	65	94.145	0.960	115	135.487	0.732	165	170.049	0.666
18.0	34.588	0.859	66	95.105	0.953	116	136.219	0.730	166	170.715	0.665
18.5	35.447	0.852	67	96.058	0.945	117	136.949	0.727	167	171.380	0.665
19.0	36.299	0.846	68	97.003	0.938	118	137.676	0.724	168	172.045	0.664
19.5	37.145	0.839	69	97.941	0.930	119	138.400	0.723	169	172.709	0.664
20	37.984	1.660	70	98.871	0.924	120	139.123	0.721	170	173.373	0.663
21	39.644	1.634	71	99.795	0.916	121	139.844	0.719	171	174.036	0.663
22	41.278	1.609	72	100.711	0.911	122	140.563	0.716	172	174.699	0.663
23	42.887	1.584	73	101.622	0.904	123	141.279	0.714	173	175.362	0.663
24	44.471	1.560	74	102.526	0.897	124	141.993	0.712	174	176.025	0.663
25	46.031	1.536	75	103.423	0.891	125	142.705	0.710	175	176.688	0.663
26	47.567	1.514	76	104.314	0.885	126	143.415	0.708	176	177.351	0.663
27	49.081	1.490	77	105.199	0.878	127	144.123	0.707	177	178.014	0.662
28	50.571	1.467	78	106.077	0.874	128	144.830	0.706	178	178.676	0.662
29	52.038	1.447	79	106.951	0.868	129	145.536	0.703	179	179.338	0.662
30	53.485		80	107.819		130	146.239		180	180.000	
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ

$$E = M + e \sin E.$$

$e = 0.52$

M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	1.042	30	54.149	1.427	80	108.289	0.857	130	146.461	0.697
0.5	1.042	1.042	31	55.576	1.406	81	109.146	0.851	131	147.158	0.695
1.0	2.084	1.040	32	56.982	1.385	82	109.997	0.846	132	147.853	0.694
1.5	3.124	1.039	33	58.367	1.365	83	110.883	0.842	133	148.547	0.692
2.0	4.163	1.038	34	59.732	1.346	84	111.685	0.836	134	149.239	0.690
2.5	5.201	1.036	35	61.078	1.326	85	112.521	0.831	135	149.929	0.688
3.0	6.237	1.033	36	62.404	1.309	86	113.352	0.827	136	150.617	0.688
3.5	7.270	1.031	37	63.713	1.290	87	114.179	0.823	137	151.305	0.687
4.0	8.301	1.029	38	65.003	1.273	88	115.002	0.818	138	151.992	0.685
4.5	9.330	1.026	39	66.276	1.256	89	115.820	0.813	139	152.677	0.683
5.0	10.356	1.022	40	67.532	1.240	90	116.633	0.809	140	153.360	0.682
5.5	11.378	1.018	41	68.772	1.224	91	117.442	0.804	141	154.042	0.681
6.0	12.396	1.013	42	69.996	1.209	92	118.246	0.800	142	154.723	0.679
6.5	13.409	1.010	43	71.205	1.194	93	119.046	0.797	143	155.402	0.679
7.0	14.419	1.005	44	72.399	1.179	94	119.843	0.793	144	156.081	0.678
7.5	15.424	1.000	45	73.578	1.166	95	120.636	0.789	145	156.759	0.676
8.0	16.424	0.995	46	74.744	1.152	96	121.425	0.784	146	157.435	0.674
8.5	17.419	0.990	47	75.896	1.138	97	122.209	0.781	147	158.109	0.674
9.0	18.409	0.984	48	77.034	1.126	98	122.990	0.778	148	158.783	0.673
9.5	19.393	0.978	49	78.160	1.113	99	123.768	0.774	149	159.456	0.672
10.0	20.371	0.973	50	79.273	1.101	100	124.542	0.771	150	160.128	0.671
10.5	21.344	0.967	51	80.374	1.090	101	125.313	0.767	151	160.799	0.670
11.0	22.311	0.960	52	81.464	1.078	102	126.080	0.764	152	161.469	0.669
11.5	23.271	0.954	53	82.542	1.067	103	126.844	0.760	153	162.138	0.669
12.0	24.225	0.948	54	83.609	1.056	104	127.604	0.757	154	162.807	0.668
12.5	25.173	0.941	55	84.665	1.045	105	128.361	0.755	155	163.475	0.667
13.0	26.114	0.935	56	85.710	1.035	106	129.116	0.752	156	164.142	0.666
13.5	27.049	0.928	57	86.745	1.026	107	129.868	0.748	157	164.808	0.666
14.0	27.977	0.921	58	87.771	1.017	108	130.616	0.746	158	165.474	0.665
14.5	28.898	0.914	59	88.788	1.006	109	131.362	0.743	159	166.139	0.664
15.0	29.812	0.908	60	89.794	0.997	110	132.105	0.740	160	166.803	0.663
15.5	30.720	0.901	61	90.791	0.988	111	132.845	0.738	161	167.466	0.663
16.0	31.621	0.894	62	91.779	0.980	112	133.583	0.735	162	168.129	0.663
16.5	32.515	0.887	63	92.759	0.972	113	134.318	0.732	163	168.792	0.662
17.0	33.402	0.880	64	93.731	0.964	114	135.050	0.730	164	169.454	0.661
17.5	34.282	0.873	65	94.695	0.954	115	135.780	0.727	165	170.115	0.661
18.0	35.155	0.867	66	95.649	0.948	116	136.507	0.725	166	170.776	0.660
18.5	36.022	0.859	67	96.597	0.939	117	137.232	0.723	167	171.436	0.660
19.0	36.881	0.853	68	97.536	0.933	118	137.955	0.720	168	172.096	0.660
19.5	37.734	0.846	69	98.469	0.925	119	138.675	0.717	169	172.756	0.660
20	38.580	1.672	70	99.394	0.918	120	139.392	0.715	170	173.416	0.659
21	40.252	1.645	71	100.312	0.912	121	140.107	0.714	171	174.075	0.658
22	41.897	1.618	72	101.224	0.905	122	140.821	0.712	172	174.733	0.659
23	43.515	1.592	73	102.129	0.898	123	141.533	0.710	173	175.392	0.659
24	45.107	1.567	74	103.027	0.892	124	142.243	0.708	174	176.051	0.659
25	46.674	1.542	75	103.919	0.886	125	142.951	0.706	175	176.710	0.658
26	48.216	1.518	76	104.805	0.879	126	143.657	0.704	176	177.368	0.658
27	49.734	1.495	77	105.684	0.874	127	144.361	0.702	177	178.026	0.658
28	51.229	1.471	78	106.558	0.868	128	145.063	0.700	178	178.684	0.658
29	52.700	1.449	79	107.426	0.863	129	145.763	0.698	179	179.342	0.658
30	54.149		80	108.289		130	146.461		180	180.000	
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ

$$E = M + e \sin E.$$

$e = 0.53$

M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	1.064	30	54.820	1.428	80	108.754	0.852	130	146.680	0.693
0.5	1.064	1.064	31	56.248	1.407	81	109.606	0.846	131	147.373	0.691
1.0	2.128	1.062	32	57.655	1.385	82	110.452	0.842	132	148.064	0.689
1.5	3.190	1.060	33	59.040	1.364	83	111.294	0.836	133	148.753	0.687
2.0	4.250	1.059	34	60.404	1.346	84	112.130	0.830	134	149.440	0.685
2.5	5.309	1.058	35	61.750	1.325	85	112.960	0.826	135	150.125	0.685
3.0	6.367	1.056	36	63.075	1.307	86	113.786	0.821	136	150.810	0.683
3.5	7.423	1.053	37	64.382	1.288	87	114.607	0.818	137	151.493	0.682
4.0	8.476	1.048	38	65.670	1.271	88	115.425	0.813	138	152.175	0.680
4.5	9.524	1.045	39	66.941	1.253	89	116.238	0.808	139	152.855	0.679
5.0	10.569	1.042	40	68.194	1.237	90	117.046	0.803	140	153.534	0.678
5.5	11.611	1.039	41	69.431	1.220	91	117.849	0.800	141	154.212	0.677
6.0	12.650	1.034	42	70.651	1.206	92	118.649	0.795	142	154.889	0.675
6.5	13.684	1.028	43	71.857	1.190	93	119.444	0.791	143	155.564	0.673
7.0	14.712	1.023	44	73.047	1.176	94	120.235	0.788	144	156.237	0.673
7.5	15.735	1.017	45	74.223	1.161	95	121.023	0.784	145	156.910	0.672
8.0	16.752	1.013	46	75.384	1.148	96	121.807	0.780	146	157.582	0.670
8.5	17.765	1.007	47	76.532	1.134	97	122.587	0.776	147	158.252	0.670
9.0	18.772	1.001	48	77.666	1.121	98	123.363	0.773	148	158.922	0.669
9.5	19.773	0.994	49	78.787	1.109	99	124.136	0.769	149	159.591	0.667
10.0	20.767	0.988	50	79.896	1.096	100	124.905	0.766	150	160.258	0.667
10.5	21.755	0.982	51	80.992	1.085	101	125.671	0.762	151	160.925	0.665
11.0	22.737	0.975	52	82.077	1.073	102	126.433	0.759	152	161.590	0.665
11.5	23.712	0.968	53	83.150	1.062	103	127.192	0.756	153	162.255	0.664
12.0	24.680	0.961	54	84.212	1.051	104	127.948	0.752	154	162.919	0.664
12.5	25.641	0.953	55	85.263	1.040	105	128.700	0.749	155	163.583	0.663
13.0	26.594	0.947	56	86.303	1.030	106	129.449	0.746	156	164.246	0.661
13.5	27.541	0.940	57	87.333	1.021	107	130.195	0.744	157	164.907	0.661
14.0	28.481	0.932	58	88.354	1.012	108	130.939	0.741	158	165.568	0.661
14.5	29.413	0.925	59	89.366	1.001	109	131.580	0.738	159	166.229	0.660
15.0	30.338	0.918	60	90.367	0.991	110	132.418	0.735	160	166.889	0.659
15.5	31.256	0.911	61	91.358	0.983	111	133.153	0.733	161	167.548	0.659
16.0	32.167	0.903	62	92.341	0.975	112	133.886	0.731	162	168.207	0.658
16.5	33.070	0.896	63	93.316	0.967	113	134.617	0.728	163	168.865	0.658
17.0	33.966	0.889	64	94.283	0.958	114	135.345	0.725	164	169.523	0.657
17.5	34.855	0.881	65	95.241	0.949	115	136.070	0.722	165	170.180	0.656
18.0	35.736	0.874	66	96.190	0.942	116	136.792	0.720	166	170.836	0.656
18.5	36.610	0.866	67	97.132	0.934	117	137.512	0.718	167	171.492	0.656
19.0	37.476	0.860	68	98.066	0.927	118	138.230	0.715	168	172.148	0.656
19.5	38.336	0.852	69	98.993	0.920	119	138.945	0.713	169	172.804	0.655
20	39.188	1.683	70	99.913	0.913	120	139.658	0.711	170	173.459	0.655
21	40.871	1.656	71	100.826	0.906	121	140.369	0.709	171	174.114	0.654
22	42.527	1.626	72	101.732	0.900	122	141.078	0.708	172	174.768	0.655
23	44.153	1.600	73	102.632	0.893	123	141.786	0.705	173	175.423	0.654
24	45.753	1.573	74	103.525	0.887	124	142.491	0.703	174	176.077	0.655
25	47.326	1.548	75	104.412	0.880	125	143.194	0.700	175	176.732	0.654
26	48.874	1.522	76	105.292	0.873	126	143.894	0.699	176	177.386	0.653
27	50.396	1.499	77	106.165	0.869	127	144.593	0.697	177	178.039	0.654
28	51.895	1.474	78	107.034	0.863	128	145.290	0.696	178	178.693	0.653
29	53.369	1.451	79	107.897	0.857	129	145.986	0.694	179	179.346	0.654
30	54.820		80	108.754		130	146.680		180	180.000	
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ

$E = M + e \sin E.$

$e = 0.54$

M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	1.087	30	55.497	1.429	80	109.215	0.847	130	146.897	0.688
0.5	1.087	1.086	31	56.926	1.407	81	110.062	0.841	131	147.585	0.686
1.0	2.173	1.086	32	58.333	1.384	82	110.903	0.836	132	148.271	0.685
1.5	3.259	1.084	33	59.717	1.364	83	111.739	0.831	133	148.956	0.683
2.0	4.343	1.082	34	61.081	1.344	84	112.570	0.825	134	149.639	0.681
2.5	5.425	1.080	35	62.425	1.324	85	113.395	0.821	135	150.320	0.680
3.0	6.505	1.078	36	63.749	1.304	86	114.216	0.816	136	151.000	0.679
3.5	7.583	1.074	37	65.053	1.286	87	115.032	0.812	137	151.679	0.677
4.0	8.657	1.071	38	66.339	1.268	88	115.844	0.808	138	152.356	0.675
4.5	9.728	1.067	39	67.607	1.250	89	116.652	0.803	139	153.031	0.675
5.0	10.795	1.062	40	68.857	1.234	90	117.455	0.798	140	153.706	0.674
5.5	11.857	1.058	41	70.091	1.216	91	118.253	0.794	141	154.380	0.672
6.0	12.915	1.053	42	71.307	1.202	92	119.047	0.791	142	155.052	0.670
6.5	13.968	1.048	43	72.509	1.186	93	119.838	0.786	143	155.722	0.670
7.0	15.016	1.043	44	73.695	1.172	94	120.624	0.783	144	156.392	0.669
7.5	16.059	1.036	45	74.867	1.157	95	121.407	0.779	145	157.061	0.667
8.0	17.095	1.030	46	76.024	1.143	96	122.186	0.775	146	157.728	0.666
8.5	18.125	1.024	47	77.167	1.130	97	122.961	0.770	147	158.394	0.665
9.0	19.149	1.017	48	78.297	1.116	98	123.731	0.767	148	159.059	0.664
9.5	20.166	1.011	49	79.413	1.104	99	124.498	0.764	149	159.723	0.663
10.0	21.177	1.003	50	80.517	1.091	100	125.262	0.761	150	160.386	0.662
10.5	22.180	0.997	51	81.608	1.080	101	126.023	0.758	151	161.048	0.661
11.0	23.177	0.989	52	82.688	1.068	102	126.781	0.754	152	161.709	0.661
11.5	24.166	0.982	53	83.756	1.057	103	127.535	0.751	153	162.370	0.660
12.0	25.148	0.974	54	84.813	1.046	104	128.286	0.748	154	163.030	0.659
12.5	26.122	0.967	55	85.859	1.035	105	129.034	0.744	155	163.689	0.658
13.0	27.089	0.959	56	86.894	1.025	106	129.778	0.741	156	164.347	0.658
13.5	28.048	0.952	57	87.919	1.015	107	130.519	0.739	157	165.005	0.657
14.0	29.000	0.943	58	88.934	1.006	108	131.258	0.737	158	165.662	0.656
14.5	29.943	0.936	59	89.940	0.996	109	131.995	0.734	159	166.318	0.655
15.0	30.879	0.928	60	90.936	0.986	110	132.729	0.730	160	166.973	0.655
15.5	31.807	0.920	61	91.922	0.978	111	133.459	0.727	161	167.628	0.655
16.0	32.727	0.912	62	92.900	0.969	112	134.186	0.725	162	168.283	0.654
16.5	33.639	0.905	63	93.869	0.961	113	134.911	0.723	163	168.937	0.654
17.0	34.544	0.897	64	94.830	0.953	114	135.634	0.721	164	169.591	0.653
17.5	35.441	0.889	65	95.783	0.944	115	136.355	0.718	165	170.244	0.652
18.0	36.330	0.881	66	96.727	0.937	116	137.073	0.716	166	170.896	0.651
18.5	37.911	0.873	67	97.664	0.929	117	137.789	0.713	167	171.547	0.652
19.0	38.084	0.866	68	98.593	0.921	118	138.502	0.710	168	172.199	0.651
19.5	38.950	0.858	69	99.514	0.915	119	139.212	0.708	169	172.850	0.651
20	39.808	1.694	70	100.429	0.907	120	139.920	0.706	170	173.501	0.651
21	41.502	1.665	71	101.336	0.901	121	140.626	0.704	171	174.152	0.650
22	43.167	1.635	72	102.237	0.894	122	141.330	0.703	172	174.802	0.651
23	44.802	1.607	73	103.131	0.887	123	142.033	0.701	173	175.453	0.650
24	46.409	1.579	74	104.018	0.882	124	142.734	0.699	174	176.103	0.650
25	47.988	1.553	75	104.900	0.874	125	143.433	0.697	175	176.753	0.650
26	49.541	1.526	76	105.774	0.869	126	144.130	0.694	176	177.403	0.649
27	51.067	1.501	77	106.643	0.863	127	144.824	0.692	177	178.052	0.650
28	52.568	1.476	78	107.506	0.857	128	145.516	0.691	178	178.702	0.649
29	54.044	1.453	79	108.363	0.852	129	146.207	0.690	179	179.351	0.649
30	55.497		80	109.215		130	146.897		180	180.000	
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ

$$E = M + e \sin E.$$

M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	1.111	30	56.181	1.429	80	109.673	0.841	130	147.111	0.684
0.5	1.111	1.111	31	57.610	1.406	81	110.514	0.836	131	147.795	0.682
1.0	2.222	1.109	32	59.016	1.384	82	111.350	0.831	132	148.477	0.680
1.5	3.331	1.108	33	60.400	1.362	83	112.181	0.825	133	149.157	0.678
2.0	4.439	1.106	34	61.762	1.342	84	113.006	0.820	134	149.835	0.676
2.5	5.545	1.103	35	63.104	1.321	85	113.826	0.816	135	150.511	0.676
3.0	6.648	1.101	36	64.425	1.302	86	114.642	0.811	136	151.187	0.674
3.5	7.749	1.097	37	65.727	1.283	87	115.453	0.807	137	151.861	0.673
4.0	8.846	1.093	38	67.010	1.264	88	116.260	0.802	138	152.534	0.672
4.5	9.939	1.089	39	68.274	1.247	89	117.062	0.798	139	153.206	0.670
5.0	11.028	1.084	40	69.521	1.230	90	117.860	0.793	140	153.876	0.670
5.5	12.112	1.079	41	70.751	1.213	91	118.653	0.789	141	154.546	0.668
6.0	13.191	1.074	42	71.964	1.197	92	119.442	0.785	142	155.214	0.666
6.5	14.265	1.068	43	73.161	1.183	93	120.227	0.782	143	155.880	0.665
7.0	15.333	1.062	44	74.344	1.167	94	121.009	0.777	144	156.545	0.664
7.5	16.395	1.055	45	75.511	1.152	95	121.786	0.774	145	157.209	0.662
8.0	17.450	1.049	46	76.663	1.138	96	122.560	0.770	146	157.871	0.662
8.5	18.499	1.042	47	77.801	1.125	97	123.330	0.766	147	158.533	0.661
9.0	19.541	1.034	48	78.926	1.111	98	124.096	0.763	148	159.194	0.660
9.5	20.575	1.026	49	80.037	1.099	99	124.859	0.759	149	159.854	0.659
10.0	21.601	1.020	50	81.136	1.086	100	125.618	0.756	150	160.513	0.658
10.5	22.621	1.011	51	82.222	1.075	101	126.374	0.752	151	161.171	0.657
11.0	23.632	1.004	52	83.297	1.063	102	127.126	0.749	152	161.828	0.656
11.5	24.636	0.996	53	84.360	1.052	103	127.875	0.746	153	162.484	0.655
12.0	25.632	0.988	54	85.412	1.040	104	128.621	0.743	154	163.139	0.655
12.5	26.620	0.980	55	80.452	1.030	105	129.364	0.739	155	163.794	0.654
13.0	27.600	0.971	56	87.482	1.020	106	130.103	0.737	156	164.448	0.653
13.5	28.571	0.963	57	88.502	1.010	107	130.840	0.734	157	165.151	0.653
14.0	29.534	0.955	58	89.512	1.000	108	131.574	0.731	158	165.754	0.652
14.5	30.489	0.946	59	90.512	0.990	109	132.305	0.729	159	166.406	0.651
15.0	31.435	0.938	60	91.502	0.981	110	133.034	0.726	160	167.057	0.651
15.5	32.373	0.929	61	92.483	0.972	111	133.760	0.723	161	167.708	0.650
16.0	33.302	0.921	62	93.455	0.964	112	134.483	0.721	162	168.358	0.650
16.5	34.223	0.913	63	94.419	0.955	113	135.204	0.718	163	169.008	0.649
17.0	35.136	0.904	64	95.374	0.947	114	135.922	0.716	164	169.657	0.649
17.5	36.040	0.896	65	96.321	0.939	115	136.638	0.713	165	170.306	0.648
18.0	36.936	0.888	66	97.260	0.931	116	137.351	0.711	166	170.954	0.648
18.5	37.824	0.881	67	98.191	0.924	117	138.062	0.708	167	171.602	0.647
19.0	38.705	0.872	68	99.115	0.916	118	138.770	0.706	168	172.249	0.647
19.5	39.577	0.864	69	100.031	0.909	119	139.476	0.704	169	172.896	0.647
20	40.441	1.704	70	100.940	0.902	120	140.180	0.702	170	173.543	0.647
21	42.145	1.674	71	101.842	0.895	121	140.882	0.700	171	174.190	0.646
22	43.819	1.643	72	102.737	0.889	122	141.582	0.698	172	174.836	0.646
23	45.462	1.613	73	103.626	0.882	123	142.280	0.695	173	175.482	0.646
24	47.075	1.585	74	104.508	0.876	124	142.975	0.694	174	176.128	0.646
25	48.660	1.557	75	105.384	0.869	125	143.669	0.692	175	176.774	0.646
26	50.217	1.529	76	106.253	0.863	126	144.361	0.690	176	177.420	0.645
27	51.746	1.503	77	107.116	0.858	127	145.051	0.688	177	178.065	0.645
28	53.249	1.478	78	107.974	0.852	128	145.739	0.686	178	178.710	0.645
29	54.727	1.454	79	108.826	0.847	129	146.425	0.686	179	179.355	0.645
30	56.181		80	109.673		130	147.111		180	180.000	
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ

$e = 0.55$

$E = M + e \sin E.$

$e = 0.56$											
M	*E*	*Δ*	*M*	*E*	*Δ*	*M*	*E*	*Δ*	*M*	*E*	*Δ*
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	1.136	30	56.869	1.429	80	110.126	0.836	130	147.323	0.679
0.5	1.136	1.137	31	58.298	1.406	81	110.962	0.831	131	148.002	0.678
1.0	2.273	1.134	32	59.704	1.382	82	111.793	0.825	132	148.680	0.676
1.5	3.407	1.132	33	61.086	1.360	83	112.618	0.820	133	149.356	0.673
2.0	4.539	1.130	34	62.446	1.339	84	113.438	0.815	134	150.029	0.672
2.5	5.669	1.128	35	63.785	1.319	85	114.253	0.811	135	150.701	0.671
3.0	6.797	1.125	36	65.104	1.298	86	115.064	0.806	136	151.372	0.670
3.5	7.922	1.121	37	66.402	1.280	87	115.870	0.801	137	152.042	0.669
4.0	9.043	1.116	38	67.682	1.261	88	116.671	0.797	138	152.711	0.667
4.5	10.159	1.112	39	68.943	1.243	89	117.468	0.793	139	153.378	0.666
5.0	11.271	1.107	40	70.186	1.226	90	118.261	0.788	140	154.044	0.665
5.5	12.378	1.101	41	71.412	1.209	91	119.049	0.784	141	154.709	0.664
6.0	13.479	1.095	42	72.621	1.193	92	119.833	0.780	142	155.373	0.662
6.5	14.574	1.088	43	73.814	1.177	93	120.613	0.776	143	156.035	0.661
7.0	15.662	1.082	44	74.991	1.162	94	121.389	0.773	144	156.696	0.659
7.5	16.744	1.074	45	76.153	1.148	95	122.162	0.769	145	157.355	0.658
8.0	17.818	1.067	46	77.301	1.133	96	122.931	0.765	146	158.013	0.658
8.5	18.885	1.060	47	78.434	1.120	97	123.696	0.761	147	158.671	0.657
9.0	19.945	1.051	48	79.554	1.106	98	124.457	0.758	148	159.328	0.655
9.5	20.996	1.044	49	80.660	1.094	99	125.215	0.754	149	159.983	0.655
10.0	22.040	1.036	50	81.754	1.081	100	125.969	0.751	150	160.638	0.654
10.5	23.076	1.027	51	82.835	1.069	101	126.720	0.747	151	161.292	0.653
11.0	24.103	1.019	52	83.904	1.058	102	127.467	0.744	152	161.945	0.652
11.5	25.122	1.010	53	84.962	1.046	103	128.211	0.742	153	162.597	0.651
12.0	26.132	1.001	54	86.008	1.035	104	128.953	0.738	154	163.248	0.650
12.5	27.133	0.992	55	87.043	1.024	105	129.691	0.734	155	163.898	0.650
13.0	28.125	0.983	56	88.067	1.014	106	130.425	0.732	156	164.548	0.649
13.5	29.108	0.975	57	89.081	1.004	107	131.157	0.729	157	165.197	0.648
14.0	30.083	0.966	58	90.085	0.995	108	131.886	0.727	158	165.845	0.648
14.5	31.049	0.956	59	91.080	0.985	109	132.613	0.724	159	166.493	0.647
15.0	32.005	0.948	60	92.065	0.975	110	133.337	0.721	160	167.140	0.647
15.5	32.953	0.939	61	93.040	0.967	111	134.058	0.719	161	167.787	0.646
16.0	33.892	0.930	62	94.007	0.958	112	134.777	0.716	162	168.433	0.646
16.5	34.822	0.921	63	94.965	0.950	113	135.493	0.713	163	169.079	0.645
17.0	35.743	0.912	64	95.915	0.941	114	136.206	0.711	164	169.724	0.644
17.5	36.655	0.903	65	96.856	0.934	115	136.917	0.709	165	170.368	0.644
18.0	37.558	0.895	66	97.790	0.926	116	137.626	0.706	166	171.012	0.644
18.5	38.453	0.887	67	98.716	0.917	117	138.332	0.704	167	171.656	0.643
19.0	39.340	0.878	68	99.633	0.911	118	139.036	0.701	168	172.299	0.643
19.5	40.218	0.869	69	100.544	0.904	119	139.737	0.699	169	172.942	0.642
20	41.087	1.714	70	101.448	0.896	120	140.436	0.697	170	173.584	0.643
21	42.801	1.681	71	102.344	0.890	121	141.133	0.695	171	174.227	0.642
22	44.482	1.650	72	103.234	0.883	122	141.828	0.693	172	174.869	0.642
23	46.132	1.619	73	104.117	0.876	123	142.521	0.692	173	175.511	0.642
24	47.751	1.589	74	104.993	0.871	124	143.213	0.690	174	176.153	0.642
25	49.340	1.560	75	105.864	0.864	125	143.903	0.687	175	176.795	0.641
26	50.900	1.532	76	106.728	0.857	126	144.590	0.686	176	177.436	0.641
27	52.432	1.505	77	107.585	0.852	127	145.276	0.684	177	178.077	0.641
28	53.937	1.479	78	108.437	0.847	128	145.960	0.682	178	178.718	0.641
29	55.416	1.453	79	109.284	0.842	129	146.642	0.681	179	179.359	0.641
30	56.869		80	110.126		130	147.323		180	180.000	
M	*E*	*Δ*	*M*	*E*	*Δ*	*M*	*E*	*Δ*	*M*	*E*	*Δ*

$E = M + e \sin E.$

$e = 0.57$

M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	1.163	30	57.563	1.428	80	110.575	0.831	130	147.532	0.675
0.5	1.163	1.162	31	58.991	1.404	81	111.406	0.825	131	148.207	0.673
1.0	2.325	1.161	32	60.395	1.381	82	112.231	0.820	132	148.880	0.671
1.5	3.486	1.159	33	61.776	1.357	83	113.051	0.815	133	149.551	0.670
2.0	4.645	1.157	34	63.133	1.337	84	113.866	0.810	134	150.221	0.668
2.5	5.802	1.154	35	64.470	1.315	85	114.676	0.805	135	150.889	0.666
3.0	6.956	1.149	36	65.785	1.295	86	115.481	0.801	136	151.555	0.665
3.5	8.105	1.144	37	67.080	1.276	87	116.282	0.797	137	152.220	0.665
4.0	9.249	1.140	38	68.356	1.257	88	117.079	0.792	138	152.885	0.664
4.5	10.389	1.136	39	69.613	1.239	89	117.871	0.787	139	153.539	0.662
5.0	11.525	1.130	40	70.852	1.221	90	118.658	0.783	140	154.211	0.660
5.5	12.655	1.123	41	72.073	1.204	91	119.441	0.779	141	154.871	0.659
6.0	13.778	1.117	42	73.277	1.189	92	120.220	0.775	142	155.530	0.658
6.5	14.895	1.109	43	74.466	1.172	93	120.995	0.772	143	156.188	0.656
7.0	16.004	1.102	44	75.638	1.157	94	121.767	0.767	144	156.844	0.656
7.5	17.106	1.095	45	76.795	1.143	95	122.534	0.763	145	157.500	0.654
8.0	18.201	1.087	46	77.938	1.128	96	123.297	0.760	146	158.154	0.653
8.5	19.288	1.078	47	79.066	1.114	97	124.057	0.757	147	158.807	0.652
9.0	20.366	1.069	48	80.180	1.101	98	124.814	0.753	148	159.459	0.652
9.5	21.435	1.060	49	81.281	1.089	99	125.567	0.749	149	160.111	0.651
10.0	22.495	1.052	50	82.370	1.075	100	126.316	0.746	150	160.762	0.650
10.5	23.547	1.043	51	83.445	1.064	101	127.062	0.743	151	161.412	0.649
11.0	24.590	1.033	52	84.509	1.052	102	127.805	0.740	152	162.061	0.647
11.5	25.623	1.024	53	85.561	1.041	103	128.545	0.736	153	162.708	0.647
12.0	26.647	1.015	54	86.602	1.029	104	129.281	0.733	154	163.355	0.646
12.5	27.662	1.005	55	87.631	1.019	105	130.014	0.730	155	164.001	0.645
13.0	28.667	0.995	56	88.650	1.008	106	130.744	0.727	156	164.646	0.645
13.5	29.662	0.985	57	89.658	0.998	107	131.471	0.724	157	165.291	0.645
14.0	30.647	0.977	58	90.656	0.989	108	132.195	0.722	158	165.936	0.644
14.5	31.624	0.968	59	91.645	0.979	109	132.917	0.719	159	166.580	0.643
15.0	32.592	0.957	60	92.624	0.970	110	133.636	0.716	160	167.213	0.642
15.5	33.549	0.948	61	93.594	0.961	111	134.352	0.714	161	167.865	0.642
16.0	34.497	0.938	62	94.555	0.952	112	135.066	0.712	162	168.507	0.642
16.5	35.435	0.929	63	95.507	0.944	113	135.778	0.709	163	169.149	0.641
17.0	36.364	0.919	64	96.451	0.936	114	136.487	0.707	164	169.790	0.640
17.5	37.283	0.911	65	97.387	0.928	115	137.194	0.704	165	170.430	0.639
18.0	38.194	0.901	66	98.315	0.921	116	137.898	0.701	166	171.069	0.640
18.5	39.095	0.893	67	99.236	0.913	117	138.599	0.699	167	171.709	0.639
19.0	39.988	0.883	68	100.149	0.905	118	139.298	0.697	168	172.348	0.639
19.5	40.871	0.875	69	101.054	0.898	119	139.995	0.695	169	172.987	0.638
20	41.746	1.722	70	101.952	0.891	120	140.690	0.693	170	173.625	0.639
21	43.468	1.688	71	102.843	0.883	121	141.383	0.691	171	174.264	0.638
22	45.156	1.656	72	103.726	0.877	122	142.074	0.689	172	174.902	0.638
23	46.812	1.624	73	104.603	0.872	123	142.763	0.687	173	175.540	0.637
24	48.436	1.592	74	105.475	0.865	124	143.450	0.685	174	176.177	0.638
25	50.028	1.563	75	106.340	0.858	125	144.135	0.682	175	176.815	0.638
26	51.591	1.535	76	107.198	0.852	126	144.817	0.681	176	177.453	0.637
27	53.126	1.505	77	108.050	0.847	127	145.498	0.679	177	178.090	0.636
28	54.631	1.479	78	108.897	0.842	128	146.177	0.678	178	178.726	0.637
29	56.110	1.453	79	109.739	0.836	129	146.855	0.677	179	179.363	0.637
30	57.563		80	110.575		130	147.532		180	180.000	
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ

$E = M + e \sin E.$

$e = 0.58$											
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	1.191	30	58.262	1.426	80	111.020	0.825	130	147.738	0.671
0.5	1.191	1.190	31	59.688	1.402	81	111.845	0.820	131	148.409	0.669
1.0	2.381	1.188	32	61.090	1.378	82	112.665	0.815	132	149.078	0.667
1.5	3.569	1.185	33	62.468	1.355	83	113.480	0.810	133	149.745	0.665
2.0	4.754	1.183	34	63.823	1.333	84	114.290	0.804	134	150.410	0.664
2.5	5.937	1.180	35	65.156	1.312	85	115.094	0.800	135	151.074	0.662
3.0	7.117	1.176	36	66.468	1.291	86	115.894	0.796	136	151.736	0.661
3.5	8.293	1.171	37	67.759	1.272	87	116.690	0.792	137	152.397	0.660
4.0	9.464	1.166	38	69.031	1.252	88	117.482	0.787	138	153.057	0.659
4.5	10.630	1.160	39	70.283	1.234	89	118.269	0.782	139	153.716	0.658
5.0	11.790	1.153	40	71.517	1.217	90	119.051	0.777	140	154.374	0.656
5.5	12.943	1.147	41	72.734	1.199	91	119.828	0.774	141	155.030	0.655
6.0	14.090	1.139	42	73.933	1.184	92	120.602	0.771	142	155.685	0.654
6.5	15.229	1.132	43	75.117	1.167	93	121.373	0.766	143	156.339	0.652
7.0	16.361	1.123	44	76.284	1.152	94	122.139	0.762	144	156.991	0.651
7.5	17.484	1.115	45	77.436	1.137	95	122.901	0.759	145	157.642	0.650
8.0	18.599	1.106	46	78.573	1.123	96	123.660	0.755	146	158.292	0.649
8.5	19.705	1.097	47	79.696	1.109	97	124.415	0.752	147	158.941	0.648
9.0	20.802	1.087	48	80.805	1.095	98	125.167	0.748	148	159.589	0.648
9.5	21.889	1.078	49	81.900	1.083	99	125.915	0.744	149	160.237	0.647
10.0	22.967	1.068	50	82.983	1.070	100	126.659	0.741	150	160.884	0.646
10.5	24.035	1.058	51	84.053	1.058	101	127.400	0.738	151	161.530	0.645
11.0	25.093	1.048	52	85.111	1.046	102	128.138	0.735	152	162.175	0.643
11.5	26.141	1.038	53	86.157	1.035	103	128.873	0.732	153	162.818	0.643
12.0	27.179	1.028	54	87.192	1.023	104	129.605	0.728	154	163.461	0.642
12.5	28.207	1.018	55	88.215	1.013	105	130.333	0.725	155	164.103	0.641
13.0	29.225	1.008	56	89.228	1.003	106	131.058	0.723	156	164.744	0.641
13.5	30.233	0.997	57	90.231	0.993	107	131.781	0.720	157	165.385	0.640
14.0	31.230	0.987	58	91.224	0.983	108	132.501	0.717	158	166.025	0.639
14.5	32.217	0.977	59	92.207	0.973	109	133.218	0.714	159	166.664	0.639
15.0	33.194	0.966	60	93.180	0.965	110	133.932	0.712	160	167.303	0.639
15.5	34.160	0.956	61	94.145	0.955	111	134.644	0.709	161	167.942	0.638
16.0	35.116	0.946	62	95.100	0.946	112	135.353	0.707	162	168.580	0.637
16.5	36.062	0.937	63	96.046	0.939	113	136.060	0.704	163	169.217	0.637
17.0	36.999	0.927	64	96.985	0.930	114	136.764	0.702	164	169.854	0.636
17.5	37.926	0.917	65	97.915	0.922	115	137.466	0.700	165	170.490	0.636
18.0	38.843	0.907	66	98.837	0.915	116	138.166	0.697	166	171.126	0.635
18.5	39.750	0.898	67	99.752	0.906	117	138.863	0.695	167	171.761	0.635
19.0	40.648	0.889	68	100.658	0.900	118	139.558	0.693	168	172.396	0.635
19.5	41.537	0.879	69	101.558	0.893	119	140.251	0.690	169	173.031	0.635
20	42.416	1.730	70	102.451	0.885	120	140.941	0.688	170	173.666	0.635
21	44.146	1.694	71	103.336	0.878	121	141.639	0.686	171	174.301	0.634
22	45.840	1.661	72	104.214	0.872	122	142.315	0.685	172	174.935	0.634
23	47.501	1.628	73	105.086	0.866	123	143.000	0.683	173	175.569	0.633
24	49.129	1.596	74	105.952	0.860	124	143.683	0.680	174	176.202	0.634
25	50.725	1.565	75	106.812	0.853	125	144.363	0.678	175	176.836	0.633
26	52.290	1.536	76	107.665	0.847	126	145.041	0.677	176	177.469	0.633
27	53.826	1.506	77	108.512	0.842	127	145.718	0.675	177	178.102	0.632
28	55.332	1.478	78	109.354	0.836	128	146.393	0.673	178	178.734	0.633
29	56.810	1.452	79	110.190	0.830	129	147.066	0.672	179	179.367	0.633
30	58.262		80	111.020		130	147.738		180	180.000	
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ

$E = M + e \sin E.$

$e = 0.59$

M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	1.220	30	58.965	1.425	80	111.460	0.820	130	147.942	0.666
0.5	1.220	1.219	31	60.390	1.399	81	112.280	0.815	131	148.608	0.664
1.0	2.439	1.216	32	61.789	1.375	82	113.095	0.810	132	149.272	0.663
1.5	3.655	1.214	33	63.164	1.352	83	113.905	0.804	133	149.935	0.661
2.0	4.869	1.211	34	64.516	1.329	84	114.709	0.800	134	150.596	0.660
2.5	6.080	1.208	35	65.845	1.307	85	115.509	0.795	135	151.256	0.659
3.0	7.288	1.204	36	67.152	1.287	86	116.304	0.791	136	151.915	0.657
3.5	8.492	1.199	37	68.439	1.267	87	117.095	0.786	137	152.572	0.656
4.0	9.691	1.192	38	69.706	1.248	88	117.881	0.781	138	153.228	0.654
4.5	10.883	1.184	39	70.954	1.229	89	118.662	0.777	139	153.882	0.653
5.0	12.067	1.178	40	72.183	1.212	90	119.439	0.773	140	154.535	0.652
5.5	13.245	1.171	41	73.395	1.194	91	120.212	0.769	141	155.187	0.651
6.0	14.416	1.163	42	74.589	1.178	92	120.981	0.765	142	155.838	0.649
6.5	15.579	1.154	43	75.767	1.162	93	121.746	0.762	143	156.487	0.648
7.0	16.733	1.145	44	76.929	1.146	94	122.508	0.757	144	157.135	0.647
7.5	17.878	1.135	45	78.075	1.131	95	123.265	0.754	145	157.782	0.647
8.0	19.013	1.126	46	79.206	1.118	96	124.019	0.750	146	158.429	0.645
8.5	20.139	1.116	47	80.324	1.103	97	124.769	0.747	147	159.074	0.644
9.0	21.255	1.105	48	81.427	1.090	98	125.516	0.743	148	159.718	0.643
9.5	22.360	1.095	49	82.517	1.077	99	126.259	0.739	149	160.361	0.643
10.0	23.455	1.085	50	83.594	1.064	100	126.998	0.737	150	161.004	0.642
10.5	24.540	1.074	51	84.658	1.052	101	127.735	0.734	151	161.646	0.641
11.0	25.614	1.063	52	85.710	1.040	102	128.469	0.730	152	162.287	0.639
11.5	26.677	1.052	53	86.750	1.029	103	129.199	0.726	153	162.926	0.639
12.0	27.729	1.041	54	87.779	1.018	104	129.925	0.723	154	163.565	0.638
12.5	28.770	1.030	55	88.797	1.007	105	130.648	0.720	155	164.203	0.637
13.0	29.800	1.019	56	89.804	0.997	106	131.368	0.718	156	164.840	0.637
13.5	30.819	1.009	57	90.801	0.987	107	132.086	0.715	157	165.447	0.636
14.0	31.828	0.997	58	91.788	0.977	108	132.801	0.713	158	166.113	0.636
14.5	32.825	0.986	59	92.765	0.968	109	133.514	0.711	159	166.749	0.635
15.0	33.811	0.975	60	93.733	0.958	110	134.225	0.708	160	167.384	0.634
15.5	34.786	0.965	61	94.691	0.950	111	134.933	0.704	161	168.018	0.634
16.0	35.751	0.954	62	95.641	0.940	112	135.637	0.702	162	168.652	0.633
16.5	36.705	0.943	63	96.581	0.933	113	136.339	0.699	163	169.285	0.633
17.0	37.648	0.933	64	97.514	0.924	114	137.038	0.697	164	169.918	0.632
17.5	38.581	0.923	65	98.438	0.917	115	137.735	0.695	165	170.550	0.632
18.0	39.504	0.913	66	99.355	0.909	116	138.430	0.693	166	171.182	0.632
18.5	40.417	0.903	67	100.264	0.900	117	139.123	0.691	167	171.814	0.631
19.0	41.320	0.893	68	101.164	0.894	118	139.814	0.688	168	172.445	0.631
19.5	42.213	0.883	69	102.058	0.888	119	140.502	0.686	169	173.076	0.630
20	43.096	1.738	70	102.946	0.879	120	141.188	0.684	170	173.706	0.630
21	44.834	1.701	71	103.825	0.873	121	141.872	0.682	171	174.336	0.630
22	46.535	1.666	72	104.698	0.867	122	142.554	0.680	172	174.966	0.630
23	48.201	1.631	73	105.565	0.860	123	143.234	0.679	173	175.596	0.630
24	49.832	1.598	74	106.425	0.854	124	143.913	0.676	174	176.226	0.629
25	51.430	1.566	75	107.279	0.848	125	144.589	0.674	175	176.855	0.629
26	52.996	1.536	76	108.127	0.842	126	145.263	0.672	176	177.484	0.629
27	54.532	1.506	77	108.969	0.836	127	145.935	0.671	177	178.113	0.629
28	56.038	1.477	78	109.805	0.830	128	146.606	0.669	178	178.742	0.629
29	57.515	1.450	79	110.635	0.825	129	147.275	0.667	179	179.371	0.629
30	58.965		80	111.460		130	147.942		180	180.000	
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ

$$E = M + e \sin E.$$

$e = 0.60$											
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	1.250	30	59.673	1.422	80	111.898	0.814	130	148.144	0.662
0.5	1.250	1.249	31	61.095	1.396	81	112.712	0.809	131	148.806	0.660
1.0	2.499	1.247	32	62.491	1.371	82	113.521	0.805	132	149.466	0.658
1.5	3.746	1.244	33	63.862	1.348	83	114.326	0.799	133	150.124	0.657
2.0	4.990	1.241	34	65.210	1.325	84	115.125	0.794	134	150.781	0.656
2.5	6.231	1.237	35	66.535	1.303	85	115.919	0.790	135	151.437	0.654
3.0	7.468	1.232	36	67.838	1.282	86	116.709	0.786	136	152.091	0.653
3.5	8.700	1.226	37	69.120	1.262	87	117.495	0.781	137	152.744	0.652
4.0	9.926	1.219	38	70.382	1.243	88	118.276	0.776	138	153.396	0.650
4.5	11.145	1.212	39	71.625	1.224	89	119.052	0.772	139	154.046	0.649
5.0	12.357	1.204	40	72.849	1.206	90	119.824	0.768	140	154.695	0.648
5.5	13.561	1.196	41	74.055	1.189	91	120.592	0.764	141	155.343	0.646
6.0	14.757	1.186	42	75.244	1.172	92	121.356	0.761	142	155.989	0.645
6.5	15.943	1.177	43	76.416	1.156	93	122.117	0.756	143	156.634	0.645
7.0	17.120	1.167	44	77.572	1.141	94	122.873	0.752	144	157.279	0.643
7.5	18.287	1.156	45	78.713	1.125	95	123.625	0.749	145	157.922	0.642
8.0	19.443	1.146	46	79.838	1.111	96	124.374	0.745	146	158.564	0.641
8.5	20.589	1.135	47	80.949	1.098	97	125.119	0.742	147	159.205	0.640
9.0	21.724	1.124	48	82.047	1.084	98	125.861	0.738	148	159.845	0.639
9.5	22.748	1.113	49	83.131	1.071	99	126.599	0.735	149	160.484	0.639
10.0	23.961	1.101	50	84.202	1.058	100	127.334	0.732	150	161.123	0.638
10.5	25.062	1.090	51	85.260	1.046	101	128.266	0.729	151	161.761	0.637
11.0	26.152	1.078	52	86.306	1.034	102	128.795	0.725	152	162.398	0.635
11.5	27.230	1.066	53	87.340	1.023	103	129.520	0.722	153	163.033	0.635
12.0	28.296	1.054	54	88.363	1.012	104	130.242	0.719	154	163.668	0.634
12.5	29.350	1.042	55	89.375	1.002	105	130.961	0.716	155	164.302	0.633
13.0	30.392	1.030	56	90.377	0.991	106	131.677	0.713	156	164.935	0.633
13.5	31.422	1.019	57	91.368	0.981	107	132.390	0.711	157	165.568	0.632
14.0	32.441	1.007	58	92.349	0.971	108	133.101	0.708	158	166.200	0.632
14.5	33.448	0.996	59	93.320	0.962	109	133.809	0.705	159	166.832	0.631
15.0	34.444	0.984	60	94.282	0.952	110	134.514	0.702	160	167.463	0.630
15.5	35.428	0.972	61	95.234	0.944	111	135.216	0.700	161	168.093	0.630
16.0	36.400	0.961	62	96.178	0.935	112	135.916	0.698	162	168.723	0.629
16.5	37.361	0.951	63	97.113	0.927	113	136.614	0.695	163	169.352	0.629
17.0	38.312	0.939	64	98.040	0.919	114	137.309	0.693	164	169.981	0.628
17.5	39.251	0.928	65	98.959	0.910	115	138.002	0.691	165	170.609	0.628
18.0	40.179	0.919	66	99.869	0.903	116	138.693	0.688	166	171.237	0.628
18.5	41.098	0.908	67	100.772	0.895	117	139.381	0.686	167	171.865	0.627
19.0	42.006	0.897	68	101.667	0.888	118	140.067	0.684	168	172.492	0.627
19.5	42.903	0.886	69	102.555	0.882	119	140.751	0.682	169	173.119	0.626
20	43.789	1.745	70	103.437	0.874	120	141.433	0.680	170	173.745	0.627
21	45.534	1.706	71	104.311	0.867	121	142.113	0.678	171	174.372	0.626
22	47.240	1.669	72	105.178	0.861	122	142.791	0.675	172	174.998	0.626
23	48.909	1.634	73	106.039	0.855	123	143.466	0.673	173	175.624	0.625
24	50.543	1.600	74	106.894	0.849	124	144.139	0.672	174	176.249	0.626
25	52.143	1.566	75	107.743	0.842	125	144.811	0.670	175	176.875	0.625
26	53.709	1.535	76	108.585	0.836	126	145.481	0.668	176	177.500	0.625
27	55.244	1.505	77	109.421	0.831	127	146.149	0.667	177	178.125	0.625
28	56.749	1.476	78	110.252	0.825	128	146.816	0.665	178	178.750	0.625
29	58.225	1.448	79	111.077	0.821	129	147.481	0.663	179	179.375	0.625
30	59.673		80	111.898		130	148.144		180	180.000	
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ

$$E = M + e \sin E.$$

$e = 0.61$											
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	1.282	30	60.384	1.419	80	112.330	0.809	130	148.343	0.658
0.5	1.282	1.282	31	61.803	1.392	81	113.139	0.804	131	149.001	0.656
1.0	2.564	1.279	32	63.195	1.367	82	113.943	0.799	132	149.657	0.654
1.5	3.843	1.275	33	64.562	1.343	83	114.742	0.794	133	150.311	0.653
2.0	5.118	1.272	34	65.905	1.321	84	115.536	0.789	134	150.964	0.652
2.5	6.390	1.266	35	67.226	1.298	85	116.325	0.785	135	151.616	0.650
3.0	7.656	1.261	36	68.524	1.277	86	117.110	0.781	136	152.266	0.648
3.5	8.917	1.256	37	69.801	1.257	87	117.891	0.776	137	152.914	0.647
4.0	10.173	1.248	38	71.058	1.238	88	118.667	0.771	138	153.561	0.647
4.5	11.421	1.239	39	72.296	1.218	89	119.438	0.767	139	154.208	0.645
5.0	12.660	1.230	40	73.514	1.200	90	120.205	0.763	140	154.853	0.644
5.5	13.890	1.222	41	74.714	1.183	91	120.968	0.759	141	155.497	0.642
6.0	15.112	1.211	42	75.897	1.166	92	121.727	0.755	142	156.139	0.641
6.5	16.323	1.201	43	77.063	1.150	93	122.482	0.751	143	156.780	0.641
7.0	17.524	1.190	44	78.213	1.135	94	123.233	0.748	144	157.421	0.639
7.5	18.714	1.177	45	79.348	1.120	95	123.981	0.744	145	158.060	0.638
8.0	19.891	1.167	46	80.468	1.105	96	124.725	0.741	146	158.698	0.637
8.5	21.058	1.155	47	81.573	1.091	97	125.466	0.737	147	159.335	0.636
9.0	22.213	1.143	48	82.664	1.079	98	126.203	0.733	148	159.971	0.635
9.5	23.356	1.130	49	83.743	1.065	99	126.936	0.730	149	160.606	0.634
10.0	24.486	1.118	50	84.808	1.052	100	127.666	0.727	150	161.240	0.634
10.5	25.604	1.105	51	85.860	1.039	101	128.393	0.724	151	161.874	0.634
11.0	26.709	1.092	52	86.899	1.028	102	129.117	0.721	152	162.507	0.632
11.5	27.801	1.080	53	87.927	1.017	103	129.838	0.717	153	163.139	0.631
12.0	28.881	1.067	54	88.944	1.006	104	130.555	0.714	154	163.770	0.630
12.5	29.948	1.054	55	89.950	0.996	105	131.269	0.712	155	164.400	0.629
13.0	31.002	1.041	56	90.946	0.985	106	131.981	0.709	156	165.029	0.629
13.5	32.043	1.029	57	91.931	0.975	107	132.690	0.706	157	165.658	0.628
14.0	33.072	1.016	58	92.906	0.965	108	133.396	0.703	158	166.286	0.628
14.5	34.088	1.005	59	93.871	0.956	109	134.099	0.701	159	166.914	0.627
15.0	35.093	0.992	60	94.827	0.946	110	134.800	0.698	160	167.541	0.626
15.5	36.085	0.981	61	95.773	0.938	111	135.498	0.695	161	168.167	0.626
16.0	37.066	0.969	62	96.711	0.929	112	136.193	0.693	162	168.793	0.625
16.5	38.035	0.956	63	97.640	0.919	113	136.886	0.691	163	169.418	0.625
17.0	38.991	0.945	64	98.561	0.912	114	137.577	0.689	164	170.043	0.625
17.5	39.936	0.933	65	99.473	0.904	115	138.266	0.686	165	170.668	0.624
18.0	40.869	0.922	66	100.377	0.897	116	138.952	0.684	166	171.292	0.624
18.5	41.792	0.912	67	101.274	0.890	117	139.636	0.682	167	171.916	0.623
19.0	42.704	0.901	68	102.164	0.884	118	140.318	0.680	168	172.539	0.623
19.5	43.605	0.890	69	103.048	0.876	119	140.998	0.677	169	173.162	0.623
20	44.495	1.750	70	103.924	0.868	120	141.675	0.675	170	173.785	0.622
21	46.245	1.710	71	104.792	0.862	121	142.350	0.673	171	174.407	0.622
22	47.955	1.671	72	105.654	0.855	122	143.023	0.671	172	175.029	0.622
23	49.626	1.636	73	106.509	0.850	123	143.694	0.669	173	175.651	0.622
24	51.262	1.600	74	107.359	0.843	124	144.363	0.668	174	176.273	0.622
25	52.862	1.566	75	108.202	0.837	125	145.031	0.666	175	176.895	0.621
26	54.428	1.534	76	109.039	0.831	126	145.697	0.664	176	177.516	0.621
27	55.962	1.504	77	109.870	0.825	127	146.361	0.662	177	178.137	0.621
28	57.466	1.473	78	110.695	0.820	128	147.023	0.661	178	178.758	0.621
29	58.939	1.445	79	111.515	0.815	129	147.684	0.659	179	179.379	0.621
30	60.384		80	112.330		130	148.343		180	180.000	
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ

$E = M + e \sin E.$

$e = 0.62$

M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	1.316	30	61.099	1.414	80	112.759	0.803	130	148.540	0.653
0.5	1.316	1.315	31	62.513	1.388	81	113.562	0.799	131	149.193	0.651
1.0	2.631	1.313	32	63.901	1.363	82	114.361	0.794	132	149.844	0.650
1.5	3.944	1.309	33	65.264	1.338	83	115.155	0.789	133	150.494	0.650
2.0	5.253	1.303	34	66.602	1.315	84	115.944	0.784	134	151.144	0.648
2.5	6.556	1.299	35	67.917	1.293	85	116.728	0.779	135	151.792	0.646
3.0	7.855	1.292	36	69.210	1.272	86	117.507	0.776	136	152.438	0.645
3.5	9.147	1.285	37	70.482	1.251	87	118.283	0.771	137	153.083	0.643
4.0	10.432	1.277	38	71.733	1.231	88	119.054	0.766	138	153.726	0.642
4.5	11.709	1.268	39	72.964	1.213	89	119.820	0.762	139	154.368	0.641
5.0	12.977	1.258	40	74.177	1.195	90	120.582	0.758	140	155.009	0.640
5.5	14.235	1.248	41	75.372	1.177	91	121.340	0.754	141	155.649	0.638
6.0	15.483	1.237	42	76.549	1.160	92	122.094	0.751	142	156.287	0.637
6.5	16.720	1.225	43	77.709	1.144	93	122.845	0.746	143	156.924	0.637
7.0	17.945	1.213	44	78.853	1.129	94	123.591	0.743	144	157.561	0.635
7.5	19.158	1.200	45	79.982	1.113	95	124.334	0.739	145	158.196	0.634
8.0	20.358	1.188	46	81.095	1.099	96	125.073	0.735	146	158.830	0.633
8.5	21.546	1.175	47	82.194	1.085	97	125.808	0.732	147	159.463	0.632
9.0	22.721	1.161	48	83.279	1.072	98	126.540	0.729	148	160.095	0.631
9.5	23.882	1.147	49	84.351	1.059	99	127.269	0.726	149	160.726	0.631
10.0	25.029	1.134	50	85.410	1.045	100	127.995	0.722	150	161.357	0.630
10.5	26.163	1.121	51	86.455	1.034	101	128.717	0.719	151	161.987	0.628
11.0	27.284	1.107	52	87.489	1.022	102	129.436	0.716	152	162.615	0.628
11.5	28.391	1.093	53	88.511	1.011	103	130.152	0.713	153	163.243	0.627
12.0	29.484	1.079	54	89.522	0.999	104	130.865	0.710	154	163.870	0.626
12.5	30.563	1.066	55	90.521	0.990	105	131.575	0.707	155	164.496	0.626
13.0	31.629	1.053	56	91.511	0.979	106	132.282	0.704	156	165.122	0.625
13.5	32.682	1.039	57	92.490	0.969	107	132.986	0.702	157	165.747	0.624
14.0	33.721	1.026	58	93.459	0.959	108	133.688	0.699	158	166.371	0.624
14.5	34.747	1.013	59	94.418	0.950	109	134.387	0.696	159	166.995	0.623
15.0	35.760	1.000	60	95.368	0.941	110	135.083	0.693	160	167.618	0.622
15.5	36.760	0.987	61	96.309	0.931	111	135.776	0.691	161	168.240	0.622
16.0	37.747	0.975	62	97.240	0.923	112	136.467	0.689	162	168.862	0.622
16.5	38.722	0.962	63	98.163	0.915	113	137.156	0.686	163	169.484	0.621
17.0	39.684	0.950	64	99.078	0.906	114	137.842	0.684	164	170.105	0.620
17.5	40.634	0.938	65	99.984	0.899	115	138.526	0.682	165	170.725	0.620
18.0	41.572	0.927	66	100.883	0.892	116	139.208	0.680	166	171.345	0.620
18.5	42.499	0.915	67	101.775	0.885	117	139.888	0.677	167	171.965	0.620
19.0	43.414	0.904	68	102.660	0.877	118	140.565	0.675	168	172.585	0.619
19.5	44.318	0.893	69	103.537	0.869	119	141.240	0.673	169	173.204	0.619
20	45.211	1.755	70	104.406	0.863	120	141.913	0.671	170	173.823	0.619
21	46.966	1.713	71	105.269	0.857	121	142.584	0.669	171	174.442	0.618
22	48.679	1.673	72	106.126	0.850	122	143.253	0.667	172	175.060	0.618
23	50.352	1.636	73	106.976	0.843	123	143.920	0.666	173	175.678	0.618
24	51.988	1.600	74	107.819	0.838	124	144.586	0.664	174	176.296	0.618
25	53.588	1.566	75	108.657	0.832	125	145.250	0.662	175	176.914	0.617
26	55.154	1.532	76	109.489	0.825	126	145.912	0.660	176	177.531	0.617
27	56.686	1.501	77	110.314	0.820	127	146.572	0.658	177	178.148	0.617
28	58.187	1.470	78	111.134	0.815	128	147.230	0.656	178	178.765	0.618
29	59.657	1.442	79	111.949	0.810	129	147.886	0.654	179	179.383	0.617
30	61.099		80	112.759		130	148.540		180	180.000	
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ

$E = M + e \sin E.$

$e = 0.63$

M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	1.352	30	61.817	1.409	80	113.182	0.799	130	148.734	0.650
0.5	1.352	1.350	31	63.226	1.384	81	113.981	0.793	131	149.384	0.648
1.0	2.702	1.348	32	64.610	1.358	82	114.774	0.788	132	150.032	0.646
1.5	4.050	1.344	33	65.968	1.332	83	115.562	0.784	133	150.678	0.644
2.0	5.394	1.338	34	67.300	1.310	84	116.346	0.780	134	151.322	0.643
2.5	6.732	1.331	35	68.610	1.287	85	117.126	0.775	135	151.965	0.643
3.0	8.063	1.324	36	69.897	1.266	86	117.901	0.770	136	152.608	0.641
3.5	9.387	1.317	37	71.163	1.245	87	118.671	0.766	137	153.249	0.639
4.0	10.704	1.308	38	72.408	1.225	88	119.437	0.761	138	153.888	0.638
4.5	12.012	1.298	39	73.633	1.207	89	120.198	0.757	139	154.526	0.637
5.0	13.310	1.287	40	74.840	1.188	90	120.955	0.753	140	155.163	0.636
5.5	14.597	1.275	41	76.028	1.171	91	121.708	0.749	141	155.799	0.634
6.0	15.872	1.263	42	77.199	1.154	92	122.457	0.746	142	156.433	0.633
6.5	17.135	1.250	43	78.353	1.138	93	123.203	0.742	143	157.066	0.633
7.0	18.385	1.237	44	79.491	1.122	94	123.945	0.738	144	157.699	0.631
7.5	19.622	1.223	45	80.613	1.107	95	124.683	0.734	145	158.330	0.630
8.0	20.845	1.208	46	81.720	1.092	96	125.417	0.731	146	158.960	0.629
8.5	22.053	1.194	47	82.812	1.080	97	126.148	0.727	147	159.589	0.628
9.0	23.247	1.180	48	83.892	1.065	98	126.875	0.724	148	160.217	0.627
9.5	24.427	1.165	49	84.957	1.052	99	127.599	0.721	149	160.844	0.627
10.0	25.592	1.151	50	86.009	1.039	100	128.320	0.717	150	161.471	0.626
10.5	26.743	1.136	51	87.048	1.028	101	129.037	0.714	151	162.097	0.625
11.0	27.879	1.121	52	88.076	1.016	102	129.751	0.711	152	162.722	0.624
11.5	29.000	1.106	53	89.092	1.004	103	130.462	0.708	153	163.346	0.623
12.0	30.106	1.091	54	90.096	0.994	104	131.170	0.706	154	163.969	0.622
12.5	31.197	1.077	55	91.090	0.983	105	131.876	0.703	155	164.591	0.622
13.0	32.274	1.063	56	92.073	0.972	106	132.579	0.700	156	165.213	0.621
13.5	33.337	1.049	57	93.045	0.963	107	133.279	0.697	157	165.834	0.621
14.0	34.386	1.034	58	94.008	0.953	108	133.976	0.695	158	166.455	0.620
14.5	35.420	1.021	59	94.961	0.944	109	134.671	0.692	159	167.075	0.619
15.0	36.441	1.007	60	95.905	0.934	110	135.363	0.689	160	167.694	0.618
15.5	37.448	0.994	61	96.839	0.926	111	136.052	0.686	161	168.312	0.618
16.0	38.442	0.981	62	97.765	0.917	112	136.738	0.684	162	168.930	0.618
16.5	39.423	0.968	63	98.682	0.910	113	137.422	0.682	163	169.548	0.617
17.0	40.391	0.955	64	99.592	0.901	114	138.104	0.680	164	170.165	0.617
17.5	41.346	0.942	65	100.493	0.893	115	138.784	0.678	165	170.782	0.617
18.0	42.288	0.930	66	101.386	0.885	116	139.462	0.675	166	171.399	0.616
18.5	43.218	0.918	67	102.271	0.879	117	140.137	0.673	167	172.015	0.616
19.0	44.136	0.907	68	103.150	0.871	118	140.810	0.671	168	172.631	0.615
19.5	45.043	0.896	69	104.021	0.865	119	141.481	0.669	169	173.246	0.615
20	45.939	1.758	70	104.886	0.856	120	142.150	0.666	170	173.861	0.614
21	47.697	1.715	71	105.742	0.851	121	142.816	0.665	171	174.475	0.615
22	49.412	1.674	72	106.593	0.844	122	143.481	0.663	172	175.090	0.614
23	51.086	1.636	73	107.437	0.839	123	144.144	0.661	173	175.704	0.614
24	52.722	1.599	74	108.276	0.832	124	144.805	0.659	174	176.318	0.614
25	54.321	1.564	75	109.108	0.826	125	145.464	0.657	175	176.932	0.614
26	55.885	1.529	76	109.934	0.820	126	146.121	0.656	176	177.546	0.613
27	57.414	1.498	77	110.754	0.815	127	146.777	0.654	177	178.159	0.614
28	58.912	1.467	78	111.569	0.809	128	147.431	0.652	178	178.773	0.614
29	60.379	1.438	79	112.378	0.804	129	148.083	0.651	179	179.387	0.613
30	61.817		80	113.182		130	148.734		180	180.000	
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ

$$E = M + e \sin E.$$

$e = 0.64$											
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	1.389	30	62.537	1.405	80	113.602	0.793	130	148.926	0.645
0.5	1.389	1.387	31	63.942	1.378	81	114.395	0.789	131	149.571	0.644
1.0	2.776	1.384	32	65.320	1.352	82	115.184	0.783	132	150.215	0.642
1.5	4.160	1.380	33	66.672	1.327	83	115.967	0.779	133	150.857	0.641
2.0	5.540	1.375	34	67.999	1.304	84	116.746	0.774	134	151.498	0.640
2.5	6.915	1.368	35	69.303	1.281	85	117.520	0.770	135	152.138	0.638
3.0	8.283	1.359	36	70.584	1.260	86	118.290	0.765	136	152.776	0.637
3.5	9.642	1.350	37	71.844	1.238	87	119.055	0.761	137	153.413	0.635
4.0	10.992	1.340	38	73.082	1.219	88	119.816	0.756	138	154.048	0.634
4.5	12.332	1.328	39	74.301	1.201	89	120.572	0.753	139	154.682	0.633
5.0	13.660	1.316	40	75.502	1.182	90	121.325	0.748	140	155.315	0.632
5.5	14.976	1.303	41	76.684	1.162	91	122.073	0.744	141	155.947	0.630
6.0	16.279	1.290	42	77.848	1.147	92	122.817	0.741	142	156.577	0.629
6.5	17.569	1.276	43	78.995	1.131	93	123.558	0.736	143	157.206	0.629
7.0	18.845	1.260	44	80.126	1.116	94	124.294	0.733	144	157.835	0.628
7.5	20.105	1.245	45	81.242	1.100	95	125.027	0.730	145	158.463	0.627
8.0	21.350	1.230	46	82.342	1.086	96	125.757	0.726	146	159.090	0.625
8.5	22.580	1.215	47	83.428	1.073	97	126.483	0.723	147	159.715	0.623
9.0	23.795	1.198	48	84.501	1.058	98	127.206	0.719	148	160.338	0.623
9.5	24.993	1.182	49	85.559	1.046	99	127.925	0.716	149	160.961	0.623
10.0	26.175	1.167	50	86.605	1.033	100	128.641	0.713	150	161.584	0.622
10.5	27.342	1.151	51	87.638	1.021	101	129.354	0.710	151	162.206	0.621
11.0	28.493	1.135	52	88.659	1.010	102	130.064	0.707	152	162.827	0.620
11.5	29.628	1.119	53	89.669	0.998	103	130.771	0.703	153	163.447	0.620
12.0	30.747	1.103	54	90.667	0.987	104	131.474	0.701	154	164.067	0.619
12.5	31.850	1.088	55	91.654	0.977	105	132.175	0.698	155	164.686	0.618
13.0	32.938	1.073	56	92.631	0.966	106	132.873	0.696	156	165.304	0.617
13.5	34.011	1.058	57	93.597	0.957	107	133.569	0.693	157	165.921	0.616
14.0	35.069	1.042	58	94.554	0.947	108	134.262	0.690	158	166.537	0.616
14.5	36.111	1.028	59	95.501	0.938	109	134.952	0.687	159	167.153	0.616
15.0	37.139	1.014	60	96.439	0.928	110	135.639	0.684	160	167.769	0.615
15.5	38.153	1.000	61	97.367	0.919	111	136.323	0.682	161	168.384	0.614
16.0	39.153	0.986	62	98.286	0.912	112	137.005	0.680	162	168.998	0.614
16.5	40.139	0.972	63	99.198	0.903	113	137.685	0.678	163	169.612	0.614
17.0	41.111	0.959	64	100.101	0.895	114	138.363	0.675	164	170.226	0.613
17.5	42.070	0.946	65	100.996	0.888	115	139.038	0.673	165	170.839	0.612
18.0	43.016	0.933	66	101.884	0.880	116	139.711	0.671	166	171.451	0.613
18.5	43.949	0.921	67	102.764	0.872	117	140.382	0.669	167	172.064	0.612
19.0	44.870	0.910	68	103.636	0.865	118	141.051	0.667	168	172.676	0.611
19.5	45.780	0.897	69	104.501	0.859	119	141.718	0.665	169	173.287	0.611
20	46.677	1.760	70	105.360	0.851	120	142.383	0.663	170	173.898	0.611
21	48.437	1.716	71	106.211	0.845	121	143.046	0.661	171	174.509	0.611
22	50.153	1.675	72	107.056	0.839	122	143.707	0.659	172	175.120	0.610
23	51.828	1.635	73	107.895	0.833	123	144.366	0.657	173	175.730	0.610
24	53.463	1.597	74	108.728	0.827	124	145.023	0.654	174	176.340	0.610
25	55.060	1.561	75	109.555	0.820	125	145.677	0.653	175	176.950	0.610
26	56.621	1.526	76	110.375	0.815	126	146.330	0.651	176	177.560	0.610
27	58.147	1.494	77	111.190	0.810	127	146.981	0.650	177	178.170	0.610
28	59.641	1.463	78	112.000	0.804	128	147.631	0.648	178	178.780	0.610
29	61.104	1.433	79	112.804	0.798	129	148.279	0.647	179	179.390	0.610
30	62.537		80	113.602		130	148.926		180	180.000	
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ

$E = M + e \sin E.$

$e = 0.65$

M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	1.428	30	63.259	1.399	80	114.018	0.788	130	149.116	0.641
0.5	1.428	1.427	31	64.658	1.372	81	114.806	0.783	131	149.757	0.640
1.0	2.855	1.423	32	66.030	1.346	82	115.589	0.778	132	150.397	0.638
1.5	4.278	1.419	33	67.376	1.322	83	116.367	0.774	133	151.035	0.637
2.0	5.697	1.412	34	68.698	1.297	84	117.141	0.769	134	151.672	0.636
2.5	7.109	1.404	35	69.995	1.275	85	117.910	0.765	135	152.308	0.634
3.0	8.513	1.395	36	71.270	1.252	86	118.675	0.760	136	152.942	0.633
3.5	9.908	1.385	37	72.522	1.233	87	119.435	0.756	137	153.575	0.631
4.0	11.293	1.373	38	73.755	1.213	88	120.191	0.751	138	154.206	0.630
4.5	12.666	1.360	39	74.968	1.193	89	120.942	0.748	139	154.836	0.629
5.0	14.026	1.346	40	76.161	1.175	90	121.690	0.743	140	155.465	0.628
5.5	15.372	1.332	41	77.336	1.158	91	122.433	0.739	141	156.093	0.627
6.0	16.704	1.318	42	78.494	1.141	92	123.172	0.736	142	156.720	0.626
6.5	18.022	1.301	43	79.635	1.124	93	123.908	0.732	143	157.346	0.624
7.0	19.323	1.285	44	80.759	1.109	94	124.640	0.729	144	157.970	0.624
7.5	20.608	1.269	45	81.868	1.094	95	125.369	0.725	145	158.594	0.622
8.0	21.877	1.253	46	82.962	1.080	96	126.094	0.721	146	159.216	0.622
8.5	23.129	1.234	47	84.042	1.065	97	126.815	0.718	147	159.838	0.620
9.0	24.363	1.217	48	85.107	1.052	98	127.533	0.715	148	160.458	0.619
9.5	25.580	1.200	49	86.159	1.039	99	128.248	0.711	149	161.077	0.619
10.0	26.780	1.182	50	87.198	1.027	100	128.959	0.708	150	161.696	0.618
10.5	27.962	1.166	51	88.225	1.014	101	129.667	0.705	151	162.314	0.617
11.0	29.128	1.148	52	89.239	1.003	102	130.372	0.702	152	162.931	0.616
11.5	30.276	1.132	53	90.242	0.992	103	131.074	0.699	153	163.547	0.616
12.0	31.408	1.115	54	91.234	0.981	104	131.773	0.697	154	164.163	0.615
12.5	32.523	1.098	55	92.215	0.970	105	132.470	0.694	155	164.778	0.614
13.0	33.621	1.082	56	93.185	0.960	106	133.164	0.691	156	165.392	0.614
13.5	34.703	1.066	57	94.145	0.950	107	133.855	0.688	157	166.006	0.613
14.0	35.769	1.050	58	95.095	0.941	108	134.543	0.686	158	166.619	0.612
14.5	36.819	1.035	59	96.036	0.931	109	135.229	0.683	159	167.231	0.612
15.0	37.854	1.019	60	96.967	0.922	110	135.912	0.680	160	167.843	0.611
15.5	38.873	1.005	61	97.889	0.914	111	136.592	0.678	161	168.454	0.611
16.0	39.878	0.990	62	98.803	0.906	112	137.270	0.676	162	169.065	0.610
16.5	40.868	0.977	63	99.709	0.897	113	137.946	0.673	163	169.675	0.610
17.0	41.845	0.963	64	100.606	0.889	114	138.619	0.671	164	170.285	0.609
17.5	42.808	0.949	65	101.495	0.882	115	139.290	0.669	165	170.894	0.609
18.0	43.757	0.936	66	102.377	0.874	116	139.959	0.667	166	171.503	0.609
18.5	44.693	0.923	67	103.251	0.866	117	140.626	0.664	167	172.112	0.608
19.0	45.616	0.911	68	104.117	0.859	118	141.290	0.662	168	172.720	0.608
19.5	46.527	0.898	69	104.976	0.853	119	141.952	0.660	169	173.328	0.607
20	47.425	1.761	70	105.829	0.846	120	142.612	0.659	170	173.935	0.607
21	49.186	1.717	71	106.675	0.840	121	143.271	0.657	171	174.542	0.607
22	50.903	1.674	72	107.515	0.833	122	143.928	0.655	172	175.149	0.607
23	52.577	1.632	73	108.348	0.828	123	144.583	0.653	173	175.756	0.607
24	54.209	1.595	74	109.176	0.821	124	145.236	0.651	174	176.363	0.607
25	55.804	1.558	75	109.997	0.816	125	145.887	0.649	175	176.970	0.606
26	57.362	1.522	76	110.813	0.809	126	146.536	0.647	176	177.576	0.606
27	58.884	1.489	77	111.622	0.804	127	147.183	0.646	177	178.182	0.606
28	60.373	1.458	78	112.426	0.799	128	147.829	0.644	178	178.788	0.606
29	61.831	1.428	79	113.225	0.793	129	148.473	0.643	179	179.394	0.606
30	63.259		80	114.018		130	149.116		180	180.000	
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ

$$E = M + e \sin E.$$

M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ
e = 0.66											
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	1.471	30	63.983	1.393	80	114.430	0.783	130	149.304	0.637
0.5	1.471	1.468	31	65.376	1.366	81	115.213	0.778	131	149.941	0.636
1.0	2.939	1.464	32	66.742	1.339	82	115.991	0.773	132	150.577	0.634
1.5	4.403	1.460	33	68.081	1.315	83	116.764	0.768	133	151.211	0.633
2.0	5.863	1.452	34	69.396	1.291	84	117.532	0.764	134	151.844	0.632
2.5	7.315	1.442	35	70.687	1.263	85	118.296	0.760	135	152.476	0.630
3.0	8.757	1.433	36	71.955	1.246	86	119.056	0.755	136	153.106	0.629
3.5	10.190	1.421	37	73.201	1.226	87	119.811	0.751	137	153.735	0.627
4.0	11.611	1.408	38	74.427	1.206	88	120.562	0.747	138	154.362	0.627
4.5	13.019	1.394	39	75.633	1.186	89	121.309	0.743	139	154.989	0.625
5.0	14.413	1.377	40	76.819	1.168	90	122.052	0.738	140	155.614	0.624
5.5	15.790	1.362	41	77.987	1.151	91	122.790	0.734	141	156.238	0.623
6.0	17.152	1.345	42	79.138	1.134	92	123.524	0.731	142	156.861	0.621
6.5	18.497	1.328	43	80.272	1.117	93	124.255	0.728	143	157.482	0.621
7.0	19.825	1.310	44	81.389	1.102	94	124.983	0.724	144	158.103	0.620
7.5	21.135	1.291	45	82.491	1.087	95	125.707	0.720	145	158.723	0.619
8.0	22.426	1.273	46	83.578	1.072	96	126.427	0.716	146	159.342	0.618
8.5	23.699	1.255	47	84.650	1.059	97	127.143	0.714	147	159.960	0.616
9.0	24.954	1.235	48	85.709	1.045	98	127.857	0.710	148	160.576	0.616
9.5	26.189	1.217	49	86.754	1.033	99	128.567	0.707	149	161.192	0.615
10.0	27.406	1.198	50	87.787	1.020	100	129.274	0.703	150	161.807	0.614
10.5	28.604	1.180	51	88.807	1.008	101	129.977	0.701	151	162.421	0.613
11.0	29.784	1.162	52	89.815	0.997	102	130.678	0.697	152	163.044	0.613
11.5	30.946	1.145	53	90.812	0.985	103	131.375	0.695	153	163.647	0.612
12.0	32.089	1.125	54	91.797	0.974	104	132.070	0.692	154	164.259	0.611
12.5	33.214	1.108	55	92.771	0.964	105	132.762	0.690	155	164.870	0.611
13.0	34.322	1.090	56	93.735	0.954	106	133.452	0.686	156	165.481	0.610
13.5	35.412	1.074	57	94.689	0.944	107	134.138	0.684	157	166.091	0.609
14.0	36.486	1.057	58	95.633	0.935	108	134.822	0.682	158	166.700	0.608
14.5	37.543	1.041	59	96.568	0.925	109	135.504	0.678	159	167.308	0.608
15.0	38.584	1.025	60	97.493	0.916	110	136.182	0.676	160	167.916	0.608
15.5	39.609	1.009	61	98.409	0.907	111	136.858	0.674	161	168.524	0.607
16.0	40.618	0.995	62	99.316	0.900	112	137.532	0.671	162	169.131	0.607
16.5	41.613	0.980	63	100.216	0.890	113	138.203	0.669	163	169.738	0.606
17.0	42.593	0.965	64	101.106	0.884	114	138.872	0.667	164	170.344	0.605
17.5	43.558	0.952	65	101.990	0.877	115	139.539	0.665	165	170.949	0.605
18.0	44.510	0.938	66	102.867	0.869	116	140.204	0.663	166	171.554	0.605
18.5	45.448	0.924	67	103.736	0.861	117	140.867	0.660	167	172.159	0.605
19.0	46.372	0.912	68	104.597	0.854	118	141.527	0.657	168	172.764	0.604
19.5	47.284	0.899	69	105.451	0.846	119	142.184	0.656	169	173.368	0.604
20	48.183	1.762	70	106.297	0.840	120	142.840	0.655	170	173.972	0.603
21	49.945	1.716	71	107.137	0.834	121	143.495	0.653	171	174.575	0.603
22	51.661	1.672	72	107.971	0.827	122	144.148	0.651	172	175.178	0.604
23	53.333	1.630	73	108.798	0.822	123	144.799	0.649	173	175.782	0.603
24	54.963	1.591	74	109.620	0.816	124	145.448	0.647	174	176.385	0.603
25	56.554	1.553	75	110.436	0.810	125	146.095	0.645	175	176.988	0.603
26	58.107	1.518	76	111.246	0.804	126	146.740	0.643	176	177.591	0.602
27	59.625	1.484	77	112.050	0.798	127	147.383	0.642	177	178.193	0.602
28	61.109	1.452	78	112.848	0.794	128	148.025	0.640	178	178.795	0.603
29	62.561	1.422	79	113.642	0.788	129	148.665	0.639	179	179.398	0.602
30	63.983		80	114.430		130	149.304		180	180.000	
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ

$E = M + e \sin E.$

$e = 0.67$											
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	1.516	30	64.709	1.386	80	114.838	0.777	130	149.489	0.634
0.5	1.516	1.512	31	66.095	1.359	81	115.615	0.773	131	150.123	0.632
1.0	3.028	1.508	32	67.454	1.333	82	116.388	0.768	132	150.755	0.630
1.5	4.536	1.502	33	68.787	1.307	83	117.156	0.764	133	151.385	0.629
2.0	6.038	1.494	34	70.094	1.284	84	117.920	0.759	134	152.014	0.628
2.5	7.532	1.484	35	71.378	1.261	85	118.679	0.755	135	152.642	0.627
3.0	9.016	1.472	36	72.639	1.239	86	119.434	0.750	136	153.269	0.625
3.5	10.488	1.458	37	73.878	1.219	87	120.184	0.746	137	153.894	0.623
4.0	11.946	1.444	38	75.097	1.199	88	120.930	0.741	138	154.517	0.622
4.5	13.390	1.427	39	76.296	1.179	89	121.671	0.738	139	155.139	0.621
5.0	14.817	1.411	40	77.475	1.161	90	122.409	0.734	140	155.760	0.620
5.5	16.228	1.393	41	78.636	1.144	91	123.143	0.730	141	156.380	0.620
6.0	17.621	1.374	42	79.780	1.127	92	123.873	0.726	142	157.000	0.618
6.5	18.995	1.355	43	80.907	1.110	93	124.599	0.723	143	157.618	0.617
7.0	20.350	1.334	44	82.017	1.094	94	125.322	0.719	144	158.235	0.617
7.5	21.684	1.315	45	83.111	1.080	95	126.041	0.716	145	158.852	0.615
8.0	22.999	1.296	46	84.191	1.065	96	126.757	0.712	146	159.467	0.613
8.5	24.295	1.276	47	85.256	1.052	97	127.469	0.708	147	160.080	0.613
9.0	25.571	1.252	48	86.308	1.038	98	128.177	0.705	148	160.693	0.612
9.5	26.823	1.231	49	87.346	1.026	99	128.882	0.702	149	161.305	0.611
10.0	28.054	1.213	50	88.372	1.014	100	129.584	0.700	150	161.916	0.610
10.5	29.267	1.194	51	89.386	1.001	101	130.284	0.696	151	162.526	0.610
11.0	30.461	1.173	52	90.387	0.990	102	130.980	0.693	152	163.136	0.610
11.5	31.634	1.155	53	91.377	0.979	103	131.673	0.690	153	163.746	0.608
12.0	32.789	1.135	54	92.356	0.967	104	132.363	0.688	154	164.354	0.607
12.5	33.924	1.117	55	93.323	0.958	105	133.051	0.685	155	164.961	0.607
13.0	35.041	1.098	56	94.281	0.948	106	133.736	0.682	156	165.568	0.606
13.5	36.139	1.081	57	95.229	0.937	107	134.418	0.680	157	166.174	0.605
14.0	37.220	1.063	58	96.166	0.929	108	135.098	0.677	158	166.779	0.605
14.5	38.283	1.047	59	97.095	0.919	109	135.775	0.675	159	167.384	0.605
15.0	39.330	1.029	60	98.014	0.910	110	136.450	0.672	160	167.989	0.604
15.5	40.359	1.013	61	98.924	0.901	111	137.122	0.669	161	168.593	0.603
16.0	41.372	0.998	62	99.825	0.894	112	137.791	0.667	162	169.196	0.603
16.5	42.370	0.983	63	100.719	0.885	113	138.458	0.665	163	169.799	0.603
17.0	43.353	0.968	64	101.604	0.877	114	139.123	0.663	164	170.402	0.602
17.5	44.321	0.953	65	102.481	0.870	115	139.786	0.660	165	171.004	0.602
18.0	45.274	0.939	66	103.351	0.862	116	140.446	0.658	166	171.606	0.601
18.5	46.213	0.926	67	104.213	0.855	117	141.104	0.656	167	172.207	0.600
19.0	47.139	0.912	68	105.068	0.849	118	141.760	0.654	168	172.807	0.601
19.5	48.051	0.899	69	105.917	0.841	119	142.414	0.652	169	173.408	0.600
20	48.950	1.761	70	106.758	0.834	120	143.066	0.650	170	174.008	0.600
21	50.711	1.714	71	107.592	0.829	121	143.716	0.648	171	174.608	0.599
22	52.425	1.669	72	108.421	0.823	122	144.364	0.647	172	175.207	0.600
23	54.094	1.627	73	109.244	0.816	123	145.011	0.645	173	175.807	0.600
24	55.721	1.586	74	110.060	0.810	124	145.656	0.643	174	176.407	0.599
25	57.307	1.548	75	110.870	0.805	125	146.299	0.642	175	177.006	0.599
26	58.855	1.513	76	111.675	0.798	126	146.941	0.640	176	177.605	0.599
27	60.368	1.479	77	112.473	0.793	127	147.581	0.638	177	178.204	0.599
28	61.847	1.445	78	113.266	0.789	128	148.219	0.636	178	178.803	0.598
29	63.292	1.417	79	114.055	0.783	129	148.855	0.634	179	179.401	0.599
30	64.709		80	114.838		130	149.489		180	180.000	
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ

$$E = M + e \sin E.$$

$e = 0.68$											
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	1.562	30	65.435	1.380	80	115.241	0.773	130	149.673	0.629
0.5	1.562	1.560	31	66.815	1.352	81	116.014	0.768	131	150.302	0.628
1.0	3.122	1.555	32	68.167	1.325	82	116.782	0.763	132	150.930	0.626
1.5	4.677	1.547	33	69.492	1.300	83	117.545	0.759	133	151.556	0.626
2.0	6.224	1.538	34	70.792	1.276	84	118.304	0.753	134	152.182	0.624
2.5	7.762	1.527	35	72.068	1.254	85	119.057	0.749	135	152.806	0.623
3.0	9.289	1.513	36	73.322	1.232	86	119.806	0.746	136	153.429	0.621
3.5	10.802	1.498	37	74.554	1.211	87	120.552	0.741	137	154.050	0.620
4.0	12.300	1.481	38	75.765	1.191	88	121.293	0.737	138	154.670	0.618
4.5	13.781	1.463	39	76.956	1.172	89	122.030	0.733	139	155.288	0.618
5.0	15.244	1.444	40	78.128	1.154	90	122.763	0.729	140	155.906	0.616
5.5	16.688	1.424	41	79.282	1.136	91	123.492	0.725	141	156.522	0.616
6.0	18.112	1.403	42	80.418	1.120	92	124.217	0.722	142	157.138	0.614
6.5	19.515	1.382	43	81.538	1.103	93	124.939	0.718	143	157.752	0.613
7.0	20.897	1.360	44	82.641	1.087	94	125.657	0.715	144	158.365	0.613
7.5	22.257	1.338	45	83.728	1.073	95	126.372	0.711	145	158.978	0.611
8.0	23.595	1.316	46	84.801	1.059	96	127.083	0.707	146	159.589	0.610
8.5	24.911	1.293	47	85.860	1.045	97	127.790	0.704	147	160.199	0.609
9.0	26.204	1.271	48	86.905	1.031	98	128.494	0.701	148	160.808	0.608
9.5	27.475	1.250	49	87.936	1.019	99	129.195	0.698	149	161.416	0.608
10.0	28.725	1.228	50	88.955	1.006	100	129.893	0.694	150	162.024	0.607
10.5	29.953	1.206	51	89.961	0.995	101	130.587	0.691	151	162.631	0.606
11.0	31.159	1.185	52	90.956	0.983	102	131.278	0.689	152	163.237	0.605
11.5	32.344	1.165	53	91.939	0.972	103	131.967	0.686	153	163.842	0.604
12.0	33.509	1.144	54	92.911	0.961	104	132.653	0.684	154	164.446	0.604
12.5	34.653	1.125	55	93.872	0.951	105	133.337	0.681	155	165.050	0.604
13.0	35.778	1.106	56	94.823	0.941	106	134.018	0.678	156	165.654	0.603
13.5	36.884	1.087	57	95.764	0.931	107	134.696	0.675	157	166.257	0.602
14.0	37.971	1.069	58	96.695	0.922	108	135.371	0.672	158	166.859	0.601
14.5	39.040	1.051	59	97.617	0.913	109	136.043	0.670	159	167.460	0.601
15.0	40.091	1.033	60	98.530	0.904	110	136.713	0.668	160	168.061	0.600
15.5	41.124	1.017	61	99.434	0.896	111	137.381	0.666	161	168.661	0.600
16.0	42.141	1.000	62	100.330	0.887	112	138.047	0.663	162	169.261	0.599
16.5	43.141	0.985	63	101.217	0.879	113	138.710	0.661	163	169.860	0.599
17.0	44.126	0.969	64	102.096	0.871	114	139.371	0.658	164	170.459	0.598
17.5	45.095	0.955	65	102.967	0.864	115	140.029	0.656	165	171.057	0.598
18.0	46.050	0.940	66	103.831	0.857	116	140.685	0.654	166	171.655	0.598
18.5	46.990	0.926	67	104.688	0.849	117	141.339	0.652	167	172.253	0.597
19.0	47.916	0.912	68	105.537	0.842	118	141.991	0.650	168	172.850	0.597
19.5	48.828	0.898	69	106.379	0.836	119	142.641	0.648	169	173.447	0.596
20	49.726	1.759	70	107.215	0.829	120	143.289	0.646	170	174.043	0.597
21	51.485	1.711	71	108.044	0.824	121	143.935	0.644	171	174.640	0.596
22	53.196	1.665	72	108.868	0.817	122	144.579	0.643	172	175.236	0.596
23	54.861	1.622	73	109.685	0.810	123	145.222	0.642	173	175.832	0.596
24	56.483	1.581	74	110.495	0.805	124	145.864	0.640	174	176.428	0.596
25	58.064	1.543	75	111.300	0.799	125	146.504	0.637	175	177.024	0.595
26	59.607	1.507	76	112.099	0.794	126	147.141	0.635	176	177.619	0.596
27	61.114	1.472	77	112.893	0.788	127	147.776	0.633	177	178.215	0.595
28	62.586	1.439	78	113.681	0.783	128	148.409	0.633	178	178.810	0.595
29	64.025	1.410	79	114.464	0.777	129	149.042	0.631	179	179.405	0.595
30	65.435		80	115.241		130	149.673		180	180.000	
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ

$$E = M + e \sin E.$$

$e = 0.69$											
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	1.612	30	66.161	1.373	80	115.641	0.767	130	149.854	0.626
0.5	1.612	1.610	31	67.534	1.344	81	116.408	0.763	131	150.480	0.624
1.0	3.222	1.604	32	68.878	1.318	82	117.171	0.758	132	151.104	0.622
1.5	4.826	1.596	33	70.196	1.293	83	117.929	0.754	133	151.726	0.622
2.0	6.422	1.585	34	71.489	1.268	84	118.683	0.749	134	152.358	0.621
2.5	8.007	1.571	35	72.757	1.246	85	119.432	0.745	135	152.969	0.619
3.0	9.578	1.556	36	74.003	1.225	86	120.177	0.740	136	153.588	0.617
3.5	11.134	1.539	37	75.228	1.203	87	120.917	0.736	137	154.205	0.616
4.0	12.673	1.520	38	76.431	1.183	88	121.653	0.732	138	154.821	0.615
4.5	14.193	1.500	39	77.614	1.164	89	122.385	0.729	139	155.436	0.613
5.0	15.693	1.479	40	78.778	1.147	90	123.114	0.724	140	156.049	0.613
5.5	17.172	1.457	41	79.925	1.128	91	123.838	0.720	141	156.662	0.612
6.0	18.629	1.432	42	81.053	1.113	92	124.558	0.717	142	157.274	0.610
6.5	20.061	1.409	43	82.166	1.096	93	125.275	0.714	143	157.884	0.610
7.0	21.470	1.385	44	83.262	1.080	94	125.989	0.710	144	158.494	0.609
7.5	22.855	1.362	45	84.342	1.065	95	126.699	0.706	145	159.103	0.607
8.0	24.217	1.338	46	85.407	1.051	96	127.405	0.703	146	159.710	0.607
8.5	25.555	1.313	47	86.458	1.038	97	128.108	0.699	147	160.317	0.605
9.0	26.868	1.288	48	87.496	1.025	98	128.807	0.697	148	160.922	0.605
9.5	28.156	1.263	49	88.521	1.012	99	129.504	0.693	149	161.527	0.604
10.0	29.419	1.241	50	89.533	0.999	100	130.197	0.690	150	162.131	0.603
10.5	30.660	1.219	51	90.532	0.988	101	130.887	0.687	151	162.734	0.603
11.0	31.879	1.196	52	91.520	0.977	102	131.574	0.684	152	163.337	0.601
11.5	33.075	1.175	53	92.497	0.965	103	132.258	0.682	153	163.938	0.601
12.0	34.250	1.153	54	93.462	0.955	104	132.940	0.679	154	164.539	0.600
12.5	35.403	1.132	55	94.417	0.944	105	133.619	0.677	155	165.139	0.600
13.0	36.535	1.112	56	95.361	0.935	106	134.296	0.673	156	165.739	0.599
13.5	37.647	1.092	57	96.296	0.926	107	134.969	0.671	157	166.338	0.599
14.0	38.739	1.074	58	97.221	0.916	108	135.640	0.669	158	166.937	0.598
14.5	39.813	1.055	59	98.137	0.906	109	136.309	0.666	159	167.535	0.597
15.0	40.868	1.037	60	99.043	0.898	110	136.975	0.664	160	168.132	0.596
15.5	41.905	1.019	61	99.941	0.889	111	137.639	0.661	161	168.728	0.596
16.0	42.924	1.002	62	100.830	0.881	112	138.300	0.659	162	169.324	0.596
16.5	43.926	0.986	63	101.711	0.873	113	138.959	0.657	163	169.920	0.595
17.0	44.912	0.971	64	102.584	0.866	114	139.616	0.654	164	170.515	0.595
17.5	45.883	0.955	65	103.450	0.858	115	140.270	0.652	165	171.110	0.594
18.0	46.838	0.939	66	104.308	0.851	116	140.922	0.650	166	171.704	0.594
18.5	47.777	0.925	67	105.159	0.843	117	141.572	0.648	167	172.298	0.594
19.0	48.702	0.911	68	106.002	0.837	118	142.220	0.646	168	172.892	0.593
19.5	49.613	0.897	69	106.839	0.830	119	142.866	0.644	169	173.485	0.593
20	50.510	1.756	70	107.669	0.823	120	143.510	0.642	170	174.078	0.593
21	52.266	1.707	71	108.492	0.818	121	144.152	0.640	171	174.671	0.593
22	53.973	1.660	72	109.310	0.811	122	144.792	0.639	172	175.264	0.593
23	55.633	1.617	73	110.121	0.806	123	145.431	0.637	173	175.857	0.592
24	57.250	1.575	74	110.927	0.799	124	146.068	0.635	174	176.449	0.592
25	58.825	1.538	75	111.726	0.794	125	146.703	0.633	175	177.041	0.592
26	60.363	1.500	76	112.520	0.788	126	147.336	0.632	176	177.633	0.592
27	61.863	1.464	77	113.308	0.783	127	147.968	0.630	177	178.225	0.592
28	63.327	1.432	78	114.091	0.778	128	148.598	0.629	178	178.817	0.592
29	64.759	1.402	79	114.869	0.772	129	149.227	0.627	179	179.409	0.591
30	66.161		80	115.641		130	149.854		180	180.000	
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ

$$E = M + e \sin E.$$

$e = 0.70$											
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	1.667	30	66.888	1.365	80	116.037	0.762	130	150.033	0.622
0.5	1.667	1.662	31	68.253	1.336	81	116.799	0.758	131	150.655	0.620
1.0	3.329	1.656	32	69.589	1.310	82	117.557	0.753	132	151.275	0.619
1.5	4.985	1.647	33	70.899	1.285	83	118.310	0.749	133	151.894	0.618
2.0	6.632	1.634	34	72.184	1.260	84	119.059	0.744	134	152.512	0.617
2.5	8.266	1.620	35	73.444	1.238	85	119.803	0.739	135	153.129	0.615
3.0	9.886	1.601	36	74.682	1.217	86	120.542	0.736	136	153.744	0.614
3.5	11.487	1.582	37	75.899	1.195	87	121.278	0.731	137	154.358	0.612
4.0	13.069	1.560	38	77.094	1.175	88	122.009	0.727	138	154.970	0.611
4.5	14.629	1.539	39	78.269	1.157	89	122.736	0.724	139	155.581	0.610
5.0	16.168	1.514	40	79.426	1.138	90	123.460	0.720	140	156.191	0.609
5.5	17.682	1.490	41	80.564	1.121	91	124.180	0.716	141	156.800	0.608
6.0	19.172	1.462	42	81.685	1.105	92	124.896	0.712	142	157.408	0.607
6.5	20.634	1.435	43	82.790	1.089	93	125.608	0.709	143	158.015	0.606
7.0	22.069	1.410	44	83.879	1.073	94	126.317	0.705	144	158.621	0.605
7.5	23.479	1.385	45	84.952	1.058	95	127.022	0.702	145	159.226	0.604
8.0	24.864	1.357	46	86.010	1.044	96	127.724	0.698	146	159.830	0.603
8.5	26.221	1.330	47	87.054	1.031	97	128.422	0.695	147	160.433	0.602
9.0	27.551	1.305	48	88.085	1.017	98	129.117	0.692	148	161.035	0.601
9.5	28.856	1.280	49	89.102	1.005	99	129.809	0.689	149	161.636	0.600
10.0	30.136	1.255	50	90.107	0.993	100	130.498	0.686	150	162.236	0.600
10.5	31.391	1.230	51	91.100	0.981	101	131.184	0.683	151	162.836	0.599
11.0	32.621	1.207	52	92.081	0.969	102	131.867	0.680	152	163.435	0.598
11.5	33.828	1.183	53	93.050	0.959	103	132.547	0.677	153	164.033	0.597
12.0	35.011	1.160	54	94.009	0.948	104	133.224	0.675	154	164.630	0.597
12.5	36.171	1.139	55	94.957	0.938	105	133.899	0.672	155	165.227	0.596
13.0	37.310	1.117	56	95.895	0.928	106	134.571	0.669	156	165.823	0.596
13.5	38.427	1.097	57	96.823	0.918	107	135.240	0.667	157	166.419	0.595
14.0	39.524	1.077	58	97.741	0.910	108	135.907	0.664	158	167.014	0.594
14.5	40.601	1.058	59	98.651	0.900	109	136.571	0.662	159	167.608	0.594
15.0	41.659	1.039	60	99.551	0.892	110	137.233	0.660	160	168.202	0.593
15.5	42.698	1.021	61	100.443	0.883	111	137.893	0.657	161	168.795	0.592
16.0	43.719	1.003	62	101.326	0.875	112	138.550	0.655	162	169.387	0.592
16.5	44.722	0.987	63	102.201	0.867	113	139.205	0.652	163	169.979	0.592
17.0	45.709	0.971	64	103.068	0.860	114	139.857	0.650	164	170.571	0.591
17.5	46.680	0.955	65	103.928	0.852	115	140.007	0.649	165	171.162	0.591
18.0	47.635	0.938	66	104.780	0.845	116	141.156	0.647	166	171.753	0.591
18.5	48.573	0.923	67	105.625	0.837	117	141.803	0.644	167	172.344	0.590
19.0	49.496	0.909	68	106.462	0.831	118	142.447	0.641	168	172.934	0.590
19.5	50.405	0.896	69	107.293	0.825	119	143.088	0.640	169	173.524	0.589
20	51.301	1.752	70	108.118	0.818	120	143.728	0.638	170	174.113	0.590
21	53.053	1.702	71	108.936	0.812	121	144.366	0.637	171	174.703	0.589
22	54.755	1.655	72	109.748	0.806	122	145.003	0.635	172	175.292	0.589
23	56.410	1.610	73	110.554	0.800	123	145.638	0.633	173	175.881	0.589
24	58.020	1.569	74	111.354	0.794	124	146.271	0.631	174	176.470	0.588
25	59.589	1.532	75	112.148	0.788	125	146.902	0.629	175	177.058	0.589
26	61.121	1.492	76	112.936	0.783	126	147.531	0.628	176	177.647	0.589
27	62.613	1.456	77	113.219	0.778	127	148.159	0.626	177	178.236	0.588
28	64.069	1.425	78	114.497	0.773	128	148.785	0.625	178	178.824	0.588
29	65.494	1.394	79	115.270	0.767	129	149.410	0.623	179	179.412	0.588
30	66.888		80	116.037		130	150.033		180	180.000	
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ

$$E = M + e \sin E.$$

$e = 0.71$											
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	1.725	30	67.614	1.357	80	116.429	0.757	130	150.211	0.618
0.5	1.725	1.720	31	68.971	1.328	81	117.186	0.753	131	150.829	0.616
1.0	3.445	1.713	32	70.299	1.301	82	117.939	0.748	132	151.445	0.615
1.5	5.158	1.699	33	71.600	1.277	83	118.687	0.744	133	152.060	0.614
2.0	6.857	1.687	34	72.877	1.252	84	119.431	0.739	134	152.674	0.613
2.5	8.544	1.669	35	74.129	1.230	85	120.170	0.734	135	153.287	0.612
3.0	10.213	1.649	36	75.359	1.208	86	120.904	0.731	136	153.899	0.610
3.5	11.862	1.627	37	76.567	1.187	87	121.635	0.727	137	154.509	0.608
4.0	13.489	1.602	38	77.754	1.167	88	122.362	0.722	138	155.117	0.608
4.5	15.091	1.577	39	78.921	1.150	89	123.084	0.719	139	155.725	0.606
5.0	16.668	1.550	40	80.071	1.130	90	123.803	0.716	140	156.331	0.606
5.5	18.218	1.523	41	81.201	1.112	91	124.519	0.712	141	156.937	0.604
6.0	19.741	1.492	42	82.313	1.097	92	125.231	0.707	142	157.541	0.603
6.5	21.233	1.463	43	83.410	1.082	93	125.938	0.704	143	158.144	0.603
7.0	22.696	1.435	44	84.492	1.066	94	126.642	0.700	144	158.747	0.601
7.5	24.131	1.406	45	85.558	1.051	95	127.342	0.697	145	159.348	0.601
8.0	25.537	1.378	46	86.609	1.037	96	128.039	0.694	146	159.949	0.599
8.5	26.915	1.349	47	87.646	1.023	97	128.733	0.691	147	160.548	0.598
9.0	28.264	1.320	48	88.669	1.010	98	129.424	0.688	148	161.146	0.598
9.5	29.584	1.293	49	89.679	0.998	99	130.112	0.684	149	161.744	0.597
10.0	30.877	1.267	50	90.677	0.986	100	130.796	0.681	150	162.341	0.596
10.5	32.144	1.241	51	91.663	0.974	101	131.477	0.679	151	162.937	0.595
11.0	33.385	1.215	52	92.637	0.963	102	132.156	0.676	152	163.532	0.594
11.5	34.600	1.191	53	93.600	0.952	103	132.832	0.673	153	164.126	0.594
12.0	35.791	1.167	54	94.552	0.941	104	133.505	0.670	154	164.720	0.593
12.5	36.958	1.144	55	95.493	0.932	105	134.175	0.668	155	165.313	0.593
13.0	38.102	1.123	56	96.425	0.921	106	134.843	0.665	156	165.906	0.592
13.5	39.225	1.100	57	97.346	0.912	107	135.508	0.663	157	166.498	0.592
14.0	40.325	1.079	58	98.258	0.903	108	136.171	0.660	158	167.090	0.591
14.5	41.404	1.060	59	99.161	0.894	109	136.831	0.658	159	167.681	0.590
15.0	42.464	1.041	60	100.055	0.886	110	137.489	0.655	160	168.271	0.590
15.5	43.505	1.022	61	100.941	0.877	111	138.144	0.653	161	168.861	0.589
16.0	44.527	1.003	62	101.818	0.869	112	138.797	0.651	162	169.450	0.588
16.5	45.530	0.986	63	102.687	0.860	113	139.448	0.649	163	170.038	0.588
17.0	46.516	0.970	64	103.547	0.854	114	140.097	0.647	164	170.626	0.588
17.5	47.486	0.954	65	104.401	0.847	115	140.744	0.644	165	171.214	0.587
18.0	48.440	0.937	66	105.248	0.839	116	141.388	0.642	166	171.801	0.587
18.5	49.377	0.922	67	106.087	0.832	117	142.030	0.640	167	172.388	0.587
19.0	50.299	0.907	68	106.919	0.826	118	142.670	0.638	168	172.975	0.587
19.5	51.206	0.894	69	107.745	0.819	119	143.308	0.635	169	173.562	0.586
20	52.100	1.747	70	108.564	0.812	120	143.943	0.634	170	174.148	0.586
21	53.847	1.695	71	109.376	0.806	121	144.577	0.633	171	174.734	0.586
22	55.542	1.649	72	110.182	0.801	122	145.210	0.631	172	175.320	0.586
23	57.191	1.603	73	110.983	0.794	123	145.841	0.629	173	175.906	0.585
24	58.794	1.561	74	111.777	0.789	124	146.470	0.627	174	176.491	0.585
25	60.355	1.523	75	112.566	0.783	125	147.097	0.626	175	177.076	0.585
26	61.878	1.485	76	113.349	0.777	126	147.723	0.624	176	177.661	0.585
27	63.363	1.449	77	114.126	0.773	127	148.347	0.623	177	178.246	0.585
28	64.812	1.417	78	114.899	0.768	128	148.970	0.621	178	178.831	0.584
29	66.929	1.385	79	115.667	0.762	129	149.591	0.620	179	179.415	0.585
30	67.614		80	116.429		130	150.211		180	180.000	
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ

$E = M + e \sin E.$

$e = 0.72$											
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	1.785	30	68.340	1.347	80	116.817	0.752	130	150.386	0.614
0.5	1.785	1.781	31	69.687	1.320	81	117.569	0.748	131	151.000	0.613
1.0	3.566	1.771	32	71.007	1.293	82	118.317	0.743	132	151.613	0.611
1.5	5.337	1.758	33	72.300	1.268	83	119.060	0.739	133	152.224	0.611
2.0	7.095	1.743	34	73.568	1.244	84	119.799	0.734	134	152.835	0.609
2.5	8.838	1.723	35	74.812	1.221	85	120.533	0.730	135	153.444	0.608
3.0	10.561	1.699	36	76.033	1.200	86	121.263	0.726	136	154.052	0.607
3.5	12.260	1.674	37	77.233	1.179	87	121.989	0.722	137	154.659	0.605
4.0	13.934	1.645	38	78.412	1.159	88	122.711	0.718	138	155.264	0.603
4.5	15.579	1.617	39	79.571	1.141	89	123.429	0.714	139	155.867	0.603
5.0	17.196	1.586	40	80.712	1.123	90	124.143	0.710	140	156.470	0.602
5.5	18.782	1.555	41	81.835	1.105	91	124.853	0.707	141	157.072	0.600
6.0	20.337	1.523	42	82.940	1.089	92	125.560	0.703	142	157.672	0.600
6.5	21.860	1.491	43	84.029	1.074	93	126.263	0.700	143	158.272	0.599
7.0	23.351	1.460	44	85.103	1.058	94	126.963	0.696	144	158.871	0.598
7.5	24.811	1.427	45	86.161	1.043	95	127.659	0.693	145	159.469	0.597
8.0	26.238	1.396	46	87.204	1.029	96	128.352	0.689	146	160.066	0.596
8.5	27.634	1.366	47	88.233	1.017	97	129.041	0.686	147	160.662	0.595
9.0	29.000	1.336	48	89.250	1.003	98	129.727	0.683	148	161.257	0.594
9.5	30.336	1.306	49	90.253	0.990	99	130.410	0.681	149	161.851	0.593
10.0	31.642	1.278	50	91.243	0.979	100	131.091	0.677	150	162.444	0.592
10.5	32.920	1.250	51	92.222	0.967	101	131.768	0.674	151	163.036	0.592
11.0	34.170	1.224	52	93.189	0.956	102	132.442	0.672	152	163.628	0.591
11.5	35.394	1.197	53	94.145	0.945	103	133.114	0.669	153	164.219	0.590
12.0	36.591	1.173	54	95.090	0.935	104	133.783	0.666	154	164.809	0.590
12.5	37.764	1.148	55	96.025	0.925	105	134.449	0.664	155	165.399	0.589
13.0	38.912	1.126	56	96.950	0.915	106	135.113	0.661	156	165.988	0.589
13.5	40.038	1.103	57	97.865	0.906	107	135.774	0.658	157	166.577	0.588
14.0	41.141	1.081	58	98.771	0.896	108	136.432	0.656	158	167.165	0.587
14.5	42.222	1.061	59	99.667	0.888	109	137.088	0.653	159	167.752	0.587
15.0	43.283	1.041	60	100.555	0.879	110	137.741	0.651	160	168.339	0.586
15.5	44.324	1.022	61	101.434	0.871	111	138.392	0.649	161	168.925	0.586
16.0	45.346	1.003	62	102.305	0.863	112	139.041	0.648	162	169.511	0.585
16.5	46.349	0.985	63	103.168	0.855	113	139.689	0.645	163	170.096	0.585
17.0	47.334	0.968	64	104.023	0.847	114	140.334	0.643	164	170.681	0.584
17.5	48.302	0.951	65	104.870	0.841	115	140.977	0.640	165	171.265	0.584
18.0	49.253	0.936	66	105.711	0.834	116	141.617	0.638	166	171.849	0.584
18.5	50.189	0.920	67	106.545	0.826	117	142.255	0.636	167	172.433	0.583
19.0	51.109	0.906	68	107.371	0.820	118	142.891	0.633	168	173.016	0.583
19.5	52.015	0.891	69	108.191	0.813	119	143.524	0.632	169	173.599	0.583
20	52.906	1.740	70	109.004	0.807	120	144.156	0.631	170	174.182	0.583
21	54.646	1.688	71	109.811	0.801	121	144.787	0.629	171	174.765	0.582
22	56.334	1.642	72	110.612	0.795	122	145.416	0.627	172	175.347	0.582
23	57.976	1.594	73	111.407	0.789	123	146.043	0.625	173	175.929	0.582
24	59.570	1.553	74	112.196	0.784	124	146.668	0.623	174	176.511	0.582
25	61.123	1.514	75	112.980	0.777	125	147.291	0.622	175	177.093	0.582
26	62.637	1.477	76	113.757	0.772	126	147.913	0.620	176	177.675	0.582
27	64.114	1.441	77	114.529	0.768	127	148.533	0.619	177	178.257	0.581
28	65.555	1.408	78	115.297	0.763	128	149.152	0.618	178	178.838	0.581
29	66.963	1.377	79	116.060	0.757	129	149.770	0.616	179	179.419	0.581
30	68.340		80	116.817		130	150.386		180	180.000	
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ

$E = M + e \sin E.$

$e = 0.73$

M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	1.853	30	69.065	1.338	80	117.201	0.747	130	150.559	0.611
0.5	1.853	1.846	31	70.403	1.310	81	117.948	0.743	131	151.170	0.609
1.0	3.699	1.837	32	71.713	1.285	82	118.691	0.738	132	151.779	0.608
1.5	5.536	1.818	33	72.998	1.259	83	119.429	0.734	133	152.387	0.607
2.0	7.354	1.800	34	74.257	1.235	84	120.163	0.730	134	152.994	0.605
2.5	9.154	1.778	35	75.492	1.212	85	120.893	0.725	135	153.599	0.603
3.0	10.932	1.752	36	76.704	1.192	86	121.618	0.721	136	154.202	0.603
3.5	12.684	1.722	37	77.896	1.171	87	122.339	0.717	137	154.805	0.602
4.0	14.406	1.690	38	79.067	1.151	88	123.056	0.713	138	155.407	0.600
4.5	16.096	1.658	39	80.218	1.132	89	123.769	0.710	139	156.007	0.599
5.0	17.754	1.623	40	81.350	1.115	90	124.479	0.706	140	156.606	0.598
5.5	19.377	1.588	41	82.465	1.097	91	125.185	0.702	141	157.204	0.598
6.0	20.965	1.553	42	83.562	1.081	92	125.887	0.699	142	157.802	0.596
6.5	22.518	1.518	43	84.643	1.066	93	126.586	0.695	143	158.398	0.596
7.0	24.036	1.484	44	85.709	1.051	94	127.281	0.691	144	158.994	0.594
7.5	25.520	1.448	45	86.760	1.035	95	127.972	0.688	145	159.588	0.594
8.0	26.968	1.415	46	87.795	1.021	96	128.660	0.685	146	160.182	0.592
8.5	28.383	1.382	47	88.816	1.008	97	129.345	0.682	147	160.774	0.592
9.0	29.765	1.347	48	89.824	0.997	98	130.027	0.680	148	161.366	0.591
9.5	31.112	1.316	49	90.821	0.984	99	130.707	0.676	149	161.957	0.589
10.0	32.428	1.289	50	91.805	0.972	100	131.383	0.673	150	162.546	0.589
10.5	33.717	1.260	51	92.777	0.960	101	132.056	0.670	151	163.135	0.588
11.0	34.977	1.230	52	93.737	0.949	102	132.726	0.667	152	163.723	0.588
11.5	36.207	1.203	53	94.686	0.939	103	133.393	0.665	153	164.311	0.587
12.0	37.410	1.177	54	95.625	0.928	104	134.058	0.662	154	164.898	0.586
12.5	38.587	1.152	55	96.553	0.918	105	134.720	0.659	155	165.484	0.586
13.0	39.739	1.128	56	97.471	0.908	106	135.379	0.657	156	166.070	0.585
13.5	40.867	1.105	57	98.379	0.900	107	136.036	0.654	157	166.655	0.584
14.0	41.972	1.082	58	99.279	0.890	108	136.690	0.652	158	167.239	0.584
14.5	43.054	1.061	59	100.169	0.882	109	137.342	0.649	159	167.823	0.583
15.0	44.115	1.040	60	101.051	0.873	110	137.991	0.647	160	168.406	0.583
15.5	45.155	1.021	61	101.924	0.864	111	138.638	0.645	161	168.989	0.582
16.0	46.176	1.002	62	102.788	0.857	112	139.283	0.643	162	169.571	0.582
16.5	47.178	0.984	63	103.645	0.849	113	139.926	0.641	163	170.153	0.582
17.0	48.162	0.966	64	104.494	0.842	114	140.567	0.639	164	170.735	0.581
17.5	49.128	0.948	65	105.336	0.835	115	141.206	0.637	165	171.316	0.581
18.0	50.076	0.932	66	106.171	0.828	116	141.843	0.634	166	171.897	0.580
18.5	51.008	0.918	67	106.999	0.820	117	142.477	0.632	167	172.477	0.580
19.0	51.926	0.902	68	107.819	0.814	118	143.109	0.630	168	173.057	0.579
19.5	52.728	0.887	69	108.633	0.808	119	143.739	0.628	169	173.636	0.580
20	53.715	1.733	70	109.441	0.802	120	144.367	0.626	170	174.216	0.579
21	55.448	1.681	71	110.243	0.795	121	144.993	0.625	171	174.795	0.579
22	57.129	1.633	72	111.038	0.789	122	145.618	0.623	172	175.374	0.579
23	58.762	1.587	73	111.827	0.784	123	146.241	0.622	173	175.953	0.578
24	60.349	1.545	74	112.611	0.779	124	146.863	0.620	174	176.531	0.578
25	61.894	1.504	75	113.390	0.773	125	147.483	0.618	175	177.109	0.579
26	63.398	1.468	76	114.163	0.767	126	148.101	0.617	176	177.688	0.578
27	64.866	1.432	77	114.930	0.762	127	148.718	0.615	177	178.266	0.579
28	66.298	1.399	78	115.692	0.757	128	149.333	0.614	178	178.845	0.578
29	67.697	1.368	79	116.449	0.752	129	149.947	0.612	179	179.423	0.577
30	69.065		80	117.201		130	150.559		180	180.000	
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ

$$E = M + e \sin E.$$

M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	1.922	30	69.788	1.329	80	117.581	0.742	130	150.730	0.607
0.5	1.922	1.916	31	71.117	1.301	81	118.323	0.738	131	151.337	0.606
1.0	3.838	1.904	32	72.418	1.275	82	119.061	0.733	132	151.943	0.604
1.5	5.742	1.886	33	73.693	1.250	83	119.794	0.729	133	152.547	0.603
2.0	7.628	1.865	34	74.943	1.226	84	120.523	0.725	134	153.150	0.602
2.5	9.493	1.837	35	76.169	1.204	85	121.248	0.721	135	153.752	0.600
3.0	11.330	1.805	36	77.373	1.183	86	121.969	0.716	136	154.352	0.599
3.5	13.135	1.772	37	78.556	1.162	87	122.685	0.712	137	154.951	0.598
4.0	14.907	1.737	38	79.718	1.143	88	123.397	0.709	138	155.549	0.597
4.5	16.644	1.700	39	80.861	1.124	89	124.106	0.705	139	156.146	0.596
5.0	18.344	1.660	40	81.985	1.106	90	124.811	0.702	140	156.742	0.595
5.5	20.004	1.622	41	83.091	1.089	91	125.513	0.698	141	157.337	0.593
6.0	21.626	1.583	42	84.180	1.073	92	126.211	0.694	142	157.930	0.593
6.5	23.209	1.543	43	85.253	1.058	93	126.905	0.690	143	158.523	0.592
7.0	24.752	1.505	44	86.311	1.043	94	127.595	0.687	144	159.115	0.591
7.5	26.257	1.468	45	87.354	1.028	95	128.282	0.684	145	159.706	0.590
8.0	27.725	1.432	46	88.382	1.014	96	128.966	0.681	146	160.296	0.589
8.5	29.157	1.396	47	89.396	1.002	97	129.647	0.678	147	160.885	0.588
9.0	30.553	1.362	48	90.398	0.988	98	130.325	0.675	148	161.473	0.588
9.5	31.915	1.328	49	91.386	0.977	99	131.000	0.672	149	162.061	0.586
10.0	33.243	1.296	50	92.363	0.965	100	131.672	0.668	150	162.647	0.585
10.5	34.539	1.265	51	93.328	0.953	101	132.340	0.666	151	163.232	0.585
11.0	35.804	1.236	52	94.281	0.942	102	133.006	0.663	152	163.817	0.584
11.5	37.040	1.208	53	95.223	0.932	103	133.669	0.660	153	164.401	0.584
12.0	38.248	1.180	54	96.155	0.921	104	134.329	0.658	154	164.985	0.583
12.5	39.428	1.154	55	97.076	0.911	105	134.987	0.655	155	165.568	0.582
13.0	40.582	1.129	56	97.987	0.902	106	135.642	0.653	156	166.150	0.582
13.5	41.711	1.106	57	98.889	0.894	107	136.295	0.651	157	166.732	0.581
14.0	42.817	1.082	58	99.783	0.884	108	136.946	0.648	158	167.313	0.580
14.5	43.899	1.060	59	100.667	0.875	109	137.594	0.645	159	167.893	0.580
15.0	44.959	1.039	60	101.542	0.866	110	138.239	0.643	160	168.473	0.579
15.5	45.998	1.019	61	102.408	0.859	111	138.882	0.641	161	169.052	0.579
16.0	47.017	1.000	62	103.267	0.851	112	139.523	0.639	162	169.631	0.579
16.5	48.017	0.981	63	104.118	0.843	113	140.162	0.637	163	170.210	0.578
17.0	48.998	0.963	64	104.961	0.836	114	140.799	0.635	164	170.788	0.578
17.5	49.961	0.946	65	105.797	0.829	115	141.434	0.632	165	171.366	0.577
18.0	50.907	0.929	66	106.626	0.822	116	142.066	0.630	166	171.943	0.577
18.5	51.836	0.913	67	107.448	0.815	117	142.696	0.628	167	172.520	0.577
19.0	52.749	0.898	68	108.263	0.809	118	143.324	0.626	168	173.097	0.576
19.5	53.647	0.884	69	109.072	0.802	119	143.950	0.625	169	173.673	0.576
20	54.531	1.725	70	109.874	0.796	120	144.575	0.623	170	174.249	0.576
21	56.256	1.672	71	110.670	0.790	121	145.198	0.621	171	174.825	0.575
22	57.928	1.623	72	111.460	0.783	122	145.819	0.619	172	175.400	0.576
23	59.551	1.578	73	112.243	0.779	123	146.438	0.618	173	175.976	0.575
24	61.129	1.536	74	113.022	0.773	124	147.056	0.617	174	176.551	0.575
25	62.665	1.495	75	113.795	0.767	125	147.673	0.615	175	177.126	0.576
26	64.160	1.458	76	114.562	0.763	126	148.288	0.613	176	177.702	0.575
27	65.618	1.422	77	115.325	0.757	127	148.901	0.611	177	178.277	0.574
28	67.040	1.390	78	116.082	0.752	128	149.512	0.609	178	178.851	0.575
29	68.430	1.358	79	116.834	0.747	129	150.121	0.609	179	179.426	0.574
30	69.788		80	117.581		130	150.730		180	180.000	
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ

$$E = M + e \sin E.$$

$e = 0.75$

M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	1.999	30	70.509	1.319	80	117.957	0.738	130	150.899	0.604
0.5	1.999	1.991	31	71.828	1.292	81	118.695	0.733	131	151.503	0.602
1.0	3.990	1.977	32	73.120	1.266	82	119.428	0.728	132	152.105	0.601
1.5	5.967	1.957	33	74.386	1.241	83	120.156	0.724	133	152.706	0.599
2.0	7.924	1.930	34	75.627	1.217	84	120.880	0.720	134	153.305	0.598
2.5	9.854	1.899	35	76.844	1.195	85	121.600	0.716	135	153.903	0.597
3.0	11.753	1.862	36	78.039	1.174	86	122.316	0.712	136	154.500	0.596
3.5	13.615	1.826	37	79.213	1.153	87	123.028	0.708	137	155.096	0.594
4.0	15.441	1.785	38	80.366	1.134	88	123.736	0.704	138	155.690	0.593
4.5	17.226	1.740	39	81.500	1.116	89	124.440	0.700	139	156.283	0.592
5.0	18.966	1.698	40	82.616	1.098	90	125.140	0.697	140	156.875	0.592
5.5	20.664	1.655	41	83.714	1.081	91	125.837	0.693	141	157.467	0.590
6.0	22.319	1.612	42	84.795	1.065	92	126.530	0.690	142	158.057	0.589
6.5	23.931	1.568	43	85.860	1.049	93	127.220	0.686	143	158.646	0.589
7.0	25.499	1.528	44	86.909	1.035	94	127.906	0.683	144	159.235	0.587
7.5	27.027	1.485	45	87.944	1.021	95	128.589	0.680	145	159.822	0.587
8.0	28.512	1.447	46	88.965	1.007	96	129.269	0.676	146	160.409	0.586
8.5	29.959	1.409	47	89.972	0.994	97	129.945	0.674	147	160.995	0.585
9.0	31.368	1.373	48	90.966	0.981	98	130.619	0.671	148	161.580	0.584
9.5	32.741	1.337	49	91.947	0.969	99	131.290	0.667	149	162.164	0.583
10.0	34.078	1.303	50	92.916	0.958	100	131.957	0.664	150	162.747	0.583
10.5	35.381	1.271	51	93.874	0.946	101	132.621	0.662	151	163.330	0.582
11.0	36.652	1.240	52	94.820	0.935	102	133.283	0.659	152	163.912	0.580
11.5	37.892	1.211	53	95.755	0.925	103	133.942	0.656	153	164.492	0.579
12.0	39.103	1.183	54	96.680	0.915	104	134.598	0.654	154	165.071	0.579
12.5	40.286	1.155	55	97.595	0.905	105	135.252	0.651	155	165.650	0.579
13.0	41.441	1.129	56	98.500	0.896	106	135.903	0.649	156	166.229	0.578
13.5	42.570	1.105	57	99.396	0.886	107	136.552	0.646	157	166.807	0.578
14.0	43.675	1.081	58	100.282	0.877	108	137.198	0.644	158	167.385	0.577
14.5	44.756	1.059	59	101.159	0.869	109	137.842	0.641	159	167.962	0.577
15.0	45.815	1.037	60	102.028	0.860	110	138.483	0.639	160	168.539	0.576
15.5	46.852	1.016	61	102.888	0.853	111	139.122	0.637	161	169.115	0.576
16.0	47.868	0.997	62	103.741	0.845	112	139.759	0.635	162	169.691	0.575
16.5	48.865	0.977	63	104.586	0.838	113	140.394	0.633	163	170.266	0.575
17.0	49.842	0.959	64	105.424	0.830	114	141.027	0.631	164	170.841	0.574
17.5	50.801	0.942	65	106.254	0.823	115	141.658	0.629	165	171.415	0.574
18.0	51.743	0.925	66	107.077	0.816	116	142.287	0.627	166	171.989	0.574
18.5	52.668	0.910	67	107.893	0.810	117	142.914	0.624	167	172.563	0.573
19.0	53.578	0.894	68	108.703	0.803	118	143.538	0.622	168	173.136	0.573
19.5	54.472	0.879	69	109.506	0.796	119	144.160	0.620	169	173.709	0.573
20	55.351	1.716	70	110.302	0.790	120	144.780	0.620	170	174.282	0.572
21	57.067	1.662	71	111.092	0.785	121	145.400	0.618	171	174.854	0.572
22	58.729	1.614	72	111.877	0.778	122	146.018	0.616	172	175.426	0.573
23	60.343	1.569	73	112.655	0.774	123	146.634	0.613	173	175.999	0.572
24	61.912	1.522	74	113.429	0.768	124	147.247	0.612	174	176.571	0.572
25	63.434	1.486	75	114.197	0.762	125	147.859	0.611	175	177.143	0.572
26	64.920	1.448	76	114.959	0.757	126	148.470	0.610	176	177.715	0.572
27	66.368	1.413	77	115.716	0.752	127	149.080	0.608	177	178.287	0.571
28	67.781	1.380	78	116.468	0.747	128	149.688	0.606	178	178.858	0.571
29	69.161	1.348	79	117.215	0.742	129	150.294	0.605	179	179.429	0.571
30	70.509		80	117.957		130	150.899		180	180.000	
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ

$$E = M + e \sin E.$$

$e = 0.76$											
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	2.082	30	71.229	1.309	80	118.330	0.733	130	151.067	0.600
0.5	2.082	2.073	31	72.538	1.282	81	119.063	0.728	131	151.667	0.598
1.0	4.155	2.057	32	73.820	1.256	82	119.791	0.723	132	152.265	0.597
1.5	6.212	2.031	33	75.076	1.231	83	120.514	0.719	133	152.862	0.596
2.0	8.243	2.001	34	76.307	1.208	84	121.233	0.715	134	153.458	0.595
2.5	10.244	1.964	35	77.515	1.186	85	121.948	0.712	135	154.053	0.593
3.0	12.208	1.923	36	78.701	1.165	86	122.660	0.707	136	154.646	0.592
3.5	14.131	1.879	37	79.866	1.144	87	123.367	0.704	137	155.238	0.591
4.0	16.010	1.831	38	81.010	1.125	88	124.071	0.699	138	155.829	0.590
4.5	17.841	1.784	39	82.135	1.107	89	124.770	0.696	139	156.419	0.589
5.0	19.625	1.736	40	83.242	1.090	90	125.466	0.692	140	157.008	0.588
5.5	21.361	1.687	41	84.332	1.073	91	126.158	0.689	141	157.596	0.587
6.0	23.048	1.639	42	85.405	1.057	92	126.847	0.685	142	158.183	0.586
6.5	24.687	1.592	43	86.462	1.041	93	127.532	0.682	143	158.769	0.585
7.0	26.279	1.548	44	87.503	1.027	94	128.214	0.679	144	159.354	0.584
7.5	27.827	1.503	45	88.530	1.013	95	128.893	0.675	145	159.938	0.583
8.0	29.330	1.461	46	89.543	0.999	96	129.568	0.672	146	160.521	0.583
8.5	30.791	1.420	47	90.542	0.987	97	130.240	0.670	147	161.104	0.581
9.0	32.211	1.381	48	91.529	0.974	98	130.910	0.667	148	161.685	0.581
9.5	33.592	1.345	49	92.503	0.962	99	131.577	0.663	149	162.266	0.580
10.0	34.937	1.308	50	93.465	0.951	100	132.240	0.660	150	162.846	0.578
10.5	36.245	1.276	51	94.416	0.939	101	132.900	0.657	151	163.424	0.578
11.0	37.521	1.243	52	95.355	0.928	102	133.557	0.655	152	164.002	0.577
11.5	38.764	1.212	53	96.283	0.918	103	134.212	0.652	153	164.579	0.577
12.0	39.976	1.183	54	97.201	0.908	104	134.864	0.650	154	165.156	0.576
12.5	41.159	1.155	55	98.109	0.898	105	135.514	0.647	155	165.732	0.575
13.0	42.314	1.129	56	99.007	0.890	106	136.161	0.645	156	166.307	0.575
13.5	43.443	1.103	57	99.897	0.880	107	136.806	0.642	157	166.882	0.575
14.0	44.546	1.079	58	100.777	0.871	108	137.448	0.640	158	167.457	0.574
14.5	45.625	1.056	59	101.648	0.863	109	138.088	0.637	159	168.031	0.573
15.0	46.681	1.034	60	102.511	0.855	110	138.725	0.635	160	168.604	0.573
15.5	47.715	1.013	61	103.366	0.846	111	139.360	0.633	161	169.177	0.572
16.0	48.728	0.993	62	104.212	0.839	112	139.993	0.631	162	169.749	0.572
16.5	49.721	0.973	63	105.051	0.831	113	140.624	0.629	163	170.321	0.572
17.0	50.694	0.955	64	105.882	0.825	114	141.253	0.627	164	170.893	0.571
17.5	51.649	0.938	65	106.707	0.817	115	141.880	0.625	165	171.464	0.571
18.0	52.587	0.921	66	107.524	0.810	116	142.505	0.623	166	172.035	0.570
18.5	53.508	0.904	67	108.334	0.804	117	143.128	0.621	167	172.605	0.570
19.0	54.412	0.888	68	109.138	0.798	118	143.749	0.619	168	173.175	0.570
19.5	55.300	0.874	69	109.936	0.791	119	144.368	0.617	169	173.745	0.570
20	56.174	1.706	70	110.727	0.785	120	144.985	0.615	170	174.315	0.569
21	57.880	1.652	71	111.512	0.779	121	145.600	0.614	171	174.884	0.569
22	59.532	1.603	72	112.291	0.773	122	146.214	0.612	172	175.453	0.569
23	61.135	1.557	73	113.064	0.768	123	146.826	0.610	173	176.022	0.568
24	62.692	1.514	74	113.832	0.763	124	147.436	0.609	174	176.590	0.569
25	64.206	1.475	75	114.595	0.757	125	148.045	0.607	175	177.159	0.569
26	65.681	1.437	76	115.352	0.752	126	148.652	0.606	176	177.728	0.568
27	67.118	1.403	77	116.104	0.747	127	149.258	0.605	177	178.296	0.568
28	68.521	1.369	78	116.851	0.741	128	149.863	0.603	178	178.864	0.568
29	69.890	1.339	79	117.592	0.738	129	150.466	0.601	179	179.432	0.568
30	71.229		80	118.330		130	151.067		180	180.000	
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ

$E = M + e \sin E.$

$e = 0.77$

M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	2.175	30	71.946	1.299	80	118.698	0.728	130	151.232	0.597
0.5	2.175	2.159	31	73.245	1.272	81	119.426	0.724	131	151.829	0.595
1.0	4.334	2.141	32	74.517	1.246	82	120.150	0.719	132	152.424	0.594
1.5	6.475	2.113	33	75.763	1.221	83	120.869	0.714	133	153.018	0.592
2.0	8.588	2.076	34	76.984	1.199	84	121.583	0.710	134	153.610	0.591
2.5	10.664	2.033	35	78.183	1.176	85	122.293	0.707	135	154.201	0.590
3.0	12.697	1.984	36	79.359	1.156	86	123.000	0.703	136	154.791	0.589
3.5	14.681	1.934	37	80.515	1.135	87	123.703	0.699	137	155.380	0.587
4.0	16.615	1.880	38	81.650	1.116	88	124.402	0.695	138	155.967	0.586
4.5	18.495	1.827	39	82.766	1.099	89	125.097	0.691	139	156.553	0.586
5.0	20.322	1.772	40	83.865	1.081	90	125.788	0.688	140	157.139	0.585
5.5	22.094	1.719	41	84.946	1.065	91	126.476	0.684	141	157.724	0.583
6.0	23.813	1.665	42	86.011	1.049	92	127.160	0.681	142	158.307	0.582
6.5	25.478	1.614	43	87.060	1.033	93	127.841	0.678	143	158.889	0.582
7.0	27.092	1.565	44	88.093	1.019	94	128.519	0.674	144	159.471	0.581
7.5	28.657	1.514	45	89.112	1.006	95	129.193	0.671	145	160.052	0.580
8.0	30.171	1.475	46	90.118	0.991	96	129.864	0.668	146	160.632	0.579
8.5	31.646	1.433	47	91.109	0.979	97	130.532	0.665	147	161.211	0.578
9.0	33.079	1.390	48	92.088	0.966	98	131.197	0.662	148	161.789	0.578
9.5	34.469	1.350	49	93.054	0.955	99	131.859	0.659	149	162.367	0.576
10.0	35.819	1.313	50	94.009	0.945	100	132.518	0.656	150	162.943	0.575
10.5	37.132	1.277	51	94.954	0.931	101	133.174	0.654	151	163.518	0.574
11.0	38.409	1.244	52	95.885	0.922	102	133.828	0.651	152	164.092	0.574
11.5	39.653	1.213	53	96.807	0.911	103	134.479	0.648	153	164.666	0.574
12.0	40.866	1.182	54	97.718	0.901	104	135.127	0.646	154	165.240	0.573
12.5	42.048	1.154	55	98.619	0.892	105	135.773	0.643	155	165.813	0.572
13.0	43.202	1.126	56	99.511	0.883	106	136.416	0.641	156	166.385	0.572
13.5	44.328	1.101	57	100.394	0.874	107	137.057	0.638	157	166.957	0.571
14.0	45.429	1.076	58	101.268	0.865	108	137.695	0.636	158	167.528	0.571
14.5	46.505	1.052	59	102.133	0.856	109	138.331	0.633	159	168.099	0.570
15.0	47.557	1.030	60	102.989	0.848	110	138.964	0.631	160	168.669	0.570
15.5	48.587	1.008	61	103.837	0.840	111	139.595	0.629	161	169.239	0.569
16.0	49.595	0.988	62	104.677	0.833	112	140.224	0.627	162	169.808	0.568
16.5	50.583	0.969	63	105.510	0.826	113	140.851	0.626	163	170.376	0.568
17.0	51.552	0.950	64	106.336	0.819	114	141.477	0.624	164	170.944	0.568
17.5	52.502	0.933	65	107.155	0.812	115	142.101	0.621	165	171.512	0.568
18.0	53.435	0.915	66	107.967	0.804	116	142.722	0.619	166	172.080	0.567
18.5	54.350	0.899	67	108.771	0.798	117	143.341	0.617	167	172.647	0.567
19.0	55.249	0.883	68	109.569	0.792	118	143.958	0.615	168	173.214	0.567
19.5	56.132	0.868	69	110.361	0.786	119	144.573	0.613	169	173.781	0.566
20	57.000	1.693	70	111.147	0.780	120	145.186	0.612	170	174.347	0.566
21	58.693	1.643	71	111.927	0.774	121	145.798	0.610	171	174.913	0.566
22	60.336	1.591	72	112.701	0.768	122	146.408	0.609	172	175.479	0.566
23	61.927	1.546	73	113.469	0.762	123	147.017	0.607	173	176.045	0.565
24	63.473	1.504	74	114.231	0.757	124	147.624	0.605	174	176.610	0.565
25	64.977	1.463	75	114.988	0.752	125	148.229	0.604	175	177.175	0.566
26	66.440	1.426	76	115.740	0.747	126	148.833	0.602	176	177.741	0.565
27	67.866	1.393	77	116.487	0.742	127	149.435	0.600	177	178.306	0.565
28	69.259	1.358	78	117.229	0.737	128	150.035	0.599	178	178.871	0.564
29	70.617	1.329	79	117.966	0.732	129	150.634	0.598	179	179.435	0.565
30	71.946		80	118.698		130	151.232		180	180.000	
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ

$E = M + e \sin E.$

$e = 0.78$

M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	2.271	30	72.660	1.289	80	119.063	0.724	130	151.397	0.593
0.5	2.271	2.258	31	73.949	1.261	81	119.787	0.718	131	151.990	0.591
1.0	4.529	2.234	32	75.210	1.236	82	120.505	0.714	132	152.581	0.590
1.5	6.763	2.199	33	76.446	1.212	83	121.219	0.710	133	153.171	0.589
2.0	8.962	2.155	34	77.658	1.189	84	121.929	0.706	134	153.760	0.587
2.5	11.117	2.105	35	78.847	1.167	85	122.635	0.702	135	154.347	0.587
3.0	13.222	2.048	36	80.014	1.146	86	123.337	0.698	136	154.934	0.586
3.5	15.270	1.991	37	81.160	1.126	87	124.035	0.695	137	155.520	0.584
4.0	17.261	1.929	38	82.286	1.108	88	124.730	0.690	138	156.104	0.583
4.5	19.190	1.868	39	83.394	1.090	89	125.420	0.687	139	156.687	0.582
5.0	21.058	1.807	40	84.484	1.072	90	126.107	0.683	140	157.269	0.581
5.5	22.865	1.748	41	85.556	1.057	91	126.790	0.680	141	157.850	0.580
6.0	24.613	1.691	42	86.613	1.041	92	127.470	0.677	142	158.430	0.579
6.5	26.304	1.635	43	87.654	1.024	93	128.147	0.673	143	159.009	0.578
7.0	27.939	1.582	44	88.678	1.012	94	128.820	0.670	144	159.587	0.577
7.5	29.521	1.532	45	89.690	0.998	95	129.490	0.667	145	160.164	0.577
8.0	31.053	1.483	46	90.688	0.984	96	130.157	0.663	146	160.741	0.576
8.5	32.536	1.438	47	91.672	0.971	97	130.820	0.661	147	161.317	0.575
9.0	33.974	1.394	48	92.643	0.959	98	131.481	0.658	148	161.892	0.574
9.5	35.368	1.354	49	93.602	0.948	99	132.139	0.656	149	162.466	0.573
10.0	36.722	1.315	50	94.550	0.936	100	132.795	0.653	150	163.039	0.572
10.5	38.037	1.279	51	95.486	0.925	101	133.448	0.650	151	163.611	0.571
11.0	39.316	1.244	52	96.411	0.915	102	134.098	0.646	152	164.182	0.571
11.5	40.560	1.211	53	97.326	0.904	103	134.744	0.643	153	164.753	0.570
12.0	41.771	1.180	54	98.230	0.895	104	135.387	0.641	154	165.323	0.569
12.5	42.951	1.151	55	99.125	0.885	105	136.028	0.639	155	165.892	0.569
13.0	44.102	1.123	56	100.010	0.876	106	136.667	0.637	156	166.461	0.569
13.5	45.225	1.097	57	100.886	0.868	107	137.304	0.635	157	167.030	0.568
14.0	46.322	1.061	58	101.754	0.859	108	137.939	0.632	158	167.598	0.567
14.5	47.393	1.048	59	102.613	0.850	109	138.571	0.630	159	168.165	0.567
15.0	48.441	1.025	60	103.463	0.842	110	139.201	0.628	160	168.732	0.567
15.5	49.466	1.003	61	104.305	0.835	111	139.829	0.626	161	169.299	0.566
16.0	50.469	0.983	62	105.140	0.827	112	140.454	0.623	162	169.865	0.565
16.5	51.452	0.963	63	105.967	0.819	113	141.077	0.621	163	170.430	0.565
17.0	52.415	0.945	64	106.786	0.813	114	141.698	0.620	164	170.995	0.565
17.5	53.360	0.927	65	107.599	0.806	115	142.318	0.618	165	171.560	0.565
18.0	54.287	0.910	66	108.405	0.799	116	142.936	0.616	166	172.125	0.564
18.5	55.197	0.893	67	109.204	0.792	117	143.552	0.616	167	172.689	0.563
19.0	56.090	0.877	68	109.996	0.787	118	143.958	0.614	168	173.252	0.563
19.5	56.967	0.862	69	110.783	0.780	119	144.772	6.612	169	173.815	0.563
20	57.829	1.684	70	111.563	0.774	120	145.384	0.610	170	174.378	0.563
21	59.513	1.627	71	112.337	0.769	121	145.994	0.607	171	174.941	0.563
22	61.140	1.580	72	113.106	0.763	122	146.601	0.605	172	175.504	0.562
23	62.720	1.534	73	113.869	0.757	123	147.206	0.603	173	176.066	0.563
24	64.254	1.492	74	114.626	0.752	124	147.809	0.601	174	176.629	0.562
25	65.746	1.452	75	115.378	0.747	125	148.410	0.600	175	177.191	0.562
26	67.198	1.415	76	116.125	0.742	126	149.010	0.599	176	177.753	0.562
27	68.613	1.381	77	116.867	0.737	127	149.609	0.597	177	178.315	0.562
28	69.994	1.348	78	117.604	0.732	128	150.206	0.596	178	178.877	0.561
29	71.342	1.318	79	118.336	0.727	129	150.802	0.595	179	179.438	0.562
30	72.660		80	119.063		130	151.397		180	180.000	
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ

$$E = M + e \sin E.$$

$e = 0.79$											
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	2.380	30	73.371	1.278	80	119.424	0.719	130	151.559	0.589
0.5	2.380	2.362	31	74.649	1.251	81	120.143	0.714	131	152.148	0.588
1.0	4.742	2.333	32	75.900	1.226	82	120.857	0.710	132	152.736	0.586
1.5	7.075	2.292	33	77.126	1.202	83	121.567	0.705	133	153.322	0.586
2.0	9.367	2.240	34	78.328	1.179	84	122.272	0.701	134	153.908	0.585
2.5	11.607	2.180	35	79.507	1.157	85	122.973	0.697	135	154.493	0.583
3.0	13.787	2.114	36	80.664	1.137	86	123.670	0.694	136	155.076	0.582
3.5	15.901	2.048	37	81.801	1.117	87	124.364	0.690	137	155.658	0.581
4.0	17.949	1.978	38	82.918	1.099	88	125.054	0.686	138	156.239	0.579
4.5	19.927	1.908	39	84.017	1.081	89	125.740	0.682	139	156.818	0.579
5.0	21.835	1.842	40	85.098	1.065	90	126.422	0.679	140	157.397	0.578
5.5	23.677	1.776	41	86.163	1.047	91	127.101	0.676	141	157.975	0.577
6.0	25.453	1.713	42	87.210	1.032	92	127.777	0.673	142	158.552	0.575
6.5	27.166	1.654	43	88.242	1.018	93	128.450	0.668	143	159.127	0.575
7.0	28.820	1.596	44	89.260	1.003	94	129.118	0.665	144	159.702	0.574
7.5	30.416	1.542	45	90.263	0.990	95	129.783	0.663	145	160.276	0.573
8.0	31.958	1.492	46	91.253	0.977	96	130.446	0.660	146	160.849	0.573
8.5	33.450	1.443	47	92.230	0.964	97	131.106	0.657	147	161.422	0.572
9.0	34.893	1.398	48	93.194	0.951	98	131.763	0.653	148	161.994	0.571
9.5	36.291	1.356	49	94.145	0.940	99	132.416	0.651	149	162.565	0.569
10.0	37.647	1.317	50	95.085	0.929	100	133.067	0.648	150	163.134	0.569
10.5	38.964	1.278	51	96.014	0.919	101	133.715	0.646	151	163.703	0.568
11.0	40.242	1.241	52	96.933	0.908	102	134.361	0.643	152	164.271	0.568
11.5	41.483	1.207	53	97.841	0.897	103	135.004	0.640	153	164.839	0.567
12.0	42.690	1.177	54	98.738	0.888	104	135.644	0.638	154	165.406	0.566
12.5	43.867	1.147	55	99.626	0.879	105	136.282	0.635	155	165.972	0.566
13.0	45.014	1.119	56	100.505	0.869	106	136.917	0.633	156	166.538	0.565
13.5	46.133	1.092	57	101.374	0.861	107	137.550	0.630	157	167.103	0.564
14.0	47.225	1.066	58	102.235	0.853	108	138.180	0.628	158	167.667	0.564
14.5	48.291	1.042	59	103.088	0.844	109	138.808	0.626	159	168.231	0.564
15.0	49.333	1.019	60	103.932	0.836	110	139.434	0.624	160	168.795	0.563
15.5	50.352	0.998	61	104.768	0.828	111	140.058	0.622	161	169.358	0.563
16.0	51.350	0.977	62	105.696	0.822	112	140.680	0.620	162	169.921	0.562
16.5	52.327	0.957	63	106.518	0.814	113	141.300	0.617	163	170.483	0.562
17.0	53.284	0.938	64	107.332	0.807	114	141.917	0.616	164	171.045	0.562
17.5	54.222	0.921	65	108.039	0.800	115	142.533	0.614	165	171.607	0.562
18.0	55.143	0.903	66	108.839	0.793	116	143.147	0.611	166	172.169	0.561
18.5	56.046	0.887	67	109.632	0.787	117	143.758	0.610	167	172.730	0.560
19.0	56.933	0.870	68	110.419	0.781	118	144.368	0.608	168	173.290	0.560
19.5	57.803	0.856	69	111.200	0.775	119	144.976	0.607	169	173.850	0.560
20	58.659	1.671	70	111.975	0.769	120	145.583	0.605	170	174.410	0.560
21	60.330	1.615	71	112.744	0.763	121	146.188	0.603	171	174.970	0.559
22	61.945	1.567	72	113.507	0.758	122	146.791	0.601	172	175.529	0.559
23	63.512	1.522	73	114.265	0.752	123	147.392	0.600	173	176.088	0.559
24	65.034	1.479	74	115.017	0.747	124	147.992	0.598	174	176.647	0.559
25	66.513	1.441	75	115.764	0.742	125	148.590	0.596	175	177.206	0.559
26	67.954	1.404	76	116.506	0.737	126	149.186	0.595	176	177.765	0.559
27	69.358	1.370	77	117.243	0.732	127	149.781	0.594	177	178.324	0.559
28	70.728	1.336	78	117.975	0.727	128	150.375	0.593	178	178.883	0.559
29	72.064	1.307	79	118.702	0.722	129	150.968	0.591	179	179.442	0.558
30	73.371		80	119.424		130	151.559		180	180.000	
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ

$$E = M + e \sin E.$$

$e = 0.78$

M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	2.271	30	72.660	1.289	80	119.063	0.724	130	151.397	0.593
0.5	2.271	2.258	31	73.949	1.261	81	119.787	0.718	131	151.990	0.591
1.0	4.529	2.234	32	75.210	1.236	82	120.505	0.714	132	152.581	0.590
1.5	6.763	2.199	33	76.446	1.212	83	121.219	0.710	133	153.171	0.589
2.0	8.962	2.155	34	77.658	1.189	84	121.929	0.706	134	153.760	0.587
2.5	11.117	2.105	35	78.847	1.167	85	122.635	0.702	135	154.347	0.587
3.0	13.222	2.048	36	80.014	1.146	86	123.337	0.698	136	154.934	0.586
3.5	15.270	1.991	37	81.160	1.126	87	124.035	0.695	137	155.520	0.584
4.0	17.261	1.929	38	82.286	1.108	88	124.730	0.690	138	156.104	0.583
4.5	19.190	1.868	39	83.394	1.090	89	125.420	0.687	139	156.687	0.582
5.0	21.058	1.807	40	84.484	1.072	90	126.107	0.683	140	157.269	0.581
5.5	22.865	1.748	41	85.556	1.057	91	126.790	0.680	141	157.850	0.580
6.0	24.613	1.691	42	86.613	1.041	92	127.470	0.677	142	158.430	0.579
6.5	26.304	1.635	43	87.654	1.024	93	128.147	0.673	143	159.009	0.578
7.0	27.939	1.582	44	88.678	1.012	94	128.820	0.670	144	159.587	0.577
7.5	29.521	1.532	45	89.690	0.998	95	129.490	0.667	145	160.164	0.577
8.0	31.053	1.483	46	90.688	0.984	96	130.157	0.663	146	160.741	0.576
8.5	32.536	1.438	47	91.672	0.971	97	130.820	0.661	147	161.317	0.575
9.0	33.974	1.394	48	92.643	0.959	98	131.481	0.658	148	161.892	0.574
9.5	35.368	1.354	49	93.602	0.948	99	132.139	0.656	149	162.466	0.573
10.0	36.722	1.315	50	94.550	0.936	100	132.795	0.653	150	163.039	0.572
10.5	38.037	1.279	51	95.486	0.925	101	133.448	0.650	151	163.611	0.571
11.0	39.316	1.244	52	96.411	0.915	102	134.098	0.646	152	164.182	0.571
11.5	40.560	1.211	53	97.326	0.904	103	134.744	0.643	153	164.753	0.570
12.0	41.771	1.180	54	98.230	0.895	104	135.387	0.641	154	165.323	0.569
12.5	42.951	1.151	55	99.125	0.885	105	136.028	0.639	155	165.892	0.569
13.0	44.102	1.123	56	100.010	0.876	106	136.667	0.637	156	166.461	0.569
13.5	45.225	1.097	57	100.886	0.868	107	137.304	0.635	157	167.030	0.568
14.0	46.322	1.061	58	101.754	0.859	108	137.939	0.632	158	167.598	0.567
14.5	47.393	1.048	59	102.613	0.850	109	138.571	0.630	159	168.165	0.567
15.0	48.441	1.025	60	103.463	0.842	110	139.201	0.628	160	168.732	0.567
15.5	49.466	1.003	61	104.305	0.835	111	139.829	0.626	161	169.299	0.566
16.0	50.469	0.983	62	105.140	0.827	112	140.454	0.623	162	169.865	0.565
16.5	51.452	0.963	63	105.967	0.819	113	141.077	0.621	163	170.430	0.565
17.0	52.415	0.945	64	106.786	0.813	114	141.698	0.620	164	170.995	0.565
17.5	53.360	0.927	65	107.599	0.806	115	142.318	0.618	165	171.560	0.565
18.0	54.287	0.910	66	108.405	0.799	116	142.936	0.616	166	172.125	0.564
18.5	55.197	0.893	67	109.204	0.792	117	143.552	0.616	167	172.689	0.563
19.0	56.090	0.877	68	109.996	0.787	118	143.958	0.614	168	173.252	0.563
19.5	56.967	0.862	69	110.783	0.780	119	144.772	6.612	169	173.815	0.563
20	57.829	1.684	70	111.563	0.774	120	145.384	0.610	170	174.378	0.563
21	59.513	1.627	71	112.337	0.769	121	145.994	0.607	171	174.941	0.563
22	61.140	1.580	72	113.106	0.763	122	146.601	0.605	172	175.504	0.562
23	62.720	1.534	73	113.869	0.757	123	147.206	0.603	173	176.066	0.563
24	64.254	1.492	74	114.626	0.752	124	147.809	0.601	174	176.629	0.562
25	65.746	1.452	75	115.378	0.747	125	148.410	0.600	175	177.191	0.562
26	67.198	1.415	76	116.125	0.742	126	149.010	0.599	176	177.753	0.562
27	68.613	1.381	77	116.867	0.737	127	149.609	0.597	177	178.315	0.562
28	69.994	1.348	78	117.604	0.732	128	150.206	0.596	178	178.877	0.561
29	71.342	1.318	79	118.336	0.727	129	150.802	0.595	179	179.438	0.562
30	72.660		80	119.063		130	151.397		180	180.000	
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ

$$E = M + e \sin E.$$

$e = 0.79$											
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	2.380	30	73.371	1.278	80	119.424	0.719	130	151.559	0.589
0.5	2.380	2.362	31	74.649	1.251	81	120.143	0.714	131	152.148	0.588
1.0	4.742	2.333	32	75.900	1.226	82	120.857	0.710	132	152.736	0.586
1.5	7.075	2.292	33	77.126	1.202	83	121.567	0.705	133	153.322	0.586
2.0	9.367	2.240	34	78.328	1.179	84	122.272	0.701	134	153.908	0.585
2.5	11.607	2.180	35	79.507	1.157	85	122.973	0.697	135	154.493	0.583
3.0	13.787	2.114	36	80.664	1.137	86	123.670	0.694	136	155.076	0.582
3.5	15.901	2.048	37	81.801	1.117	87	124.364	0.690	137	155.658	0.581
4.0	17.949	1.978	38	82.918	1.099	88	125.054	0.686	138	156.239	0.579
4.5	19.927	1.908	39	84.017	1.081	89	125.740	0.682	139	156.818	0.579
5.0	21.835	1.842	40	85.098	1.065	90	126.422	0.679	140	157.397	0.578
5.5	23.677	1.776	41	86.163	1.047	91	127.101	0.676	141	157.975	0.577
6.0	25.453	1.713	42	87.210	1.032	92	127.777	0.673	142	158.552	0.575
6.5	27.166	1.654	43	88.242	1.018	93	128.450	0.668	143	159.127	0.575
7.0	28.820	1.596	44	89.260	1.003	94	129.118	0.665	144	159.702	0.574
7.5	30.416	1.542	45	90.263	0.990	95	129.783	0.663	145	160.276	0.573
8.0	31.958	1.492	46	91.253	0.977	96	130.446	0.660	146	160.849	0.573
8.5	33.450	1.443	47	92.230	0.964	97	131.106	0.657	147	161.422	0.572
9.0	34.893	1.398	48	93.194	0.951	98	131.763	0.653	148	161.994	0.571
9.5	36.291	1.356	49	94.145	0.940	99	132.416	0.651	149	162.565	0.569
10.0	37.647	1.317	50	95.085	0.929	100	133.067	0.648	150	163.134	0.569
10.5	38.964	1.278	51	96.014	0.919	101	133.715	0.646	151	163.703	0.568
11.0	40.242	1.241	52	96.933	0.908	102	134.361	0.643	152	164.271	0.568
11.5	41.483	1.207	53	97.841	0.897	103	135.004	0.640	153	164.839	0.567
12.0	42.690	1.177	54	98.738	0.888	104	135.644	0.638	154	165.406	0.566
12.5	43.867	1.147	55	99.626	0.879	105	136.282	0.635	155	165.972	0.566
13.0	45.014	1.119	56	100.505	0.869	106	136.917	0.633	156	166.538	0.565
13.5	46.133	1.092	57	101.374	0.861	107	137.550	0.630	157	167.103	0.564
14.0	47.225	1.066	58	102.235	0.853	108	138.180	0.628	158	167.667	0.564
14.5	48.291	1.042	59	103.088	0.844	109	138.808	0.626	159	168.231	0.564
15.0	49.333	1.019	60	103.932	0.836	110	139.434	0.624	160	168.795	0.563
15.5	50.352	0.998	61	104.768	0.828	111	140.058	0.622	161	169.358	0.563
16.0	51.350	0.977	62	105.696	0.822	112	140.680	0.620	162	169.921	0.562
16.5	52.327	0.957	63	106.518	0.814	113	141.300	0.617	163	170.483	0.562
17.0	53.284	0.938	64	107.332	0.807	114	141.917	0.616	164	171.045	0.562
17.5	54.222	0.921	65	108.039	0.800	115	142.533	0.614	165	171.607	0.562
18.0	55.143	0.903	66	108.839	0.793	116	143.147	0.611	166	172.169	0.561
18.5	56.046	0.887	67	109.632	0.787	117	143.758	0.610	167	172.730	0.560
19.0	56.933	0.870	68	110.419	0.781	118	144.368	0.608	168	173.290	0.560
19.5	57.803	0.856	69	111.200	0.775	119	144.976	0.607	169	173.850	0.560
20	58.659	1.671	70	111.975	0.769	120	145.583	0.605	170	174.410	0.560
21	60.330	1.615	71	112.744	0.763	121	146.188	0.603	171	174.970	0.559
22	61.945	1.567	72	113.507	0.758	122	146.791	0.601	172	175.529	0.559
23	63.512	1.522	73	114.265	0.752	123	147.392	0.600	173	176.088	0.559
24	65.034	1.479	74	115.017	0.747	124	147.992	0.598	174	176.647	0.559
25	66.513	1.441	75	115.764	0.742	125	148.590	0.596	175	177.206	0.559
26	67.954	1.404	76	116.506	0.737	126	149.186	0.595	176	177.765	0.559
27	69.358	1.370	77	117.243	0.732	127	149.781	0.594	177	178.324	0.559
28	70.728	1.336	78	117.975	0.727	128	150.375	0.593	178	178.883	0.559
29	72.064	1.307	79	118.702	0.722	129	150.968	0.591	179	179.442	0.558
30	73.371		80	119.424		130	151.559		180	180.000	
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ

$E = M + e \sin E.$

$e = 0.80$											
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	2.497	30	74.078	1.267	80	119.782	0.714	130	151.719	0.586
0.5	2.497	2.477	31	75.345	1.241	81	120.496	0.709	131	152.305	0.584
1.0	4.974	2.443	32	76.586	1.216	82	121.205	0.705	132	152.889	0.583
1.5	7.417	2.392	33	77.802	1.192	83	121.910	0.701	133	153.472	0.582
2.0	9.809	2.329	34	78.994	1.179	84	122.611	0.696	134	154.054	0.581
2.5	12.138	2.258	35	80.163	1.147	85	123.307	0.693	135	154.635	0.580
3.0	14.396	2.182	36	81.310	1.128	86	124.000	0.689	136	155.215	0.579
3.5	16.578	2.104	37	82.438	1.108	87	124.689	0.685	137	155.794	0.578
4.0	18.682	2.027	38	83.546	1.090	88	125.374	0.682	138	156.372	0.576
4.5	20.709	1.948	39	84.636	1.072	89	126.056	0.678	139	156.948	0.576
5.0	22.657	1.873	40	85.708	1.055	90	126.734	0.675	140	157.524	0.574
5.5	24.530	1.801	41	86.763	1.040	91	127.409	0.672	141	158.098	0.574
6.0	26.331	1.734	42	87.803	1.024	92	128.081	0.668	142	158.672	0.572
6.5	28.065	1.669	43	88.827	1.009	93	128.749	0.664	143	159.244	0.572
7.0	29.734	1.607	44	89.836	0.996	94	129.413	0.662	144	159.816	0.571
7.5	31.341	1.551	45	90.832	0.982	95	130.075	0.658	145	160.387	0.569
8.0	32.892	1.497	46	91.814	0.969	96	130.733	0.655	146	160.956	0.569
8.5	34.389	1.447	47	92.783	0.956	97	131.388	0.653	147	161.525	0.569
9.0	35.836	1.400	48	93.739	0.945	98	132.041	0.650	148	162.094	0.568
9.5	37.236	1.356	49	94.684	0.932	99	132.691	0.647	149	162.662	0.566
10.0	38.592	1.315	50	95.616	0.922	100	133.338	0.644	150	163.228	0.565
10.5	39.907	1.276	51	96.538	0.912	101	133.982	0.642	151	163.793	0.565
11.0	41.183	1.234	52	97.450	0.901	102	134.624	0.638	152	164.358	0.564
11.5	42.417	1.206	53	98.351	0.891	103	135.262	0.636	153	164.922	0.564
12.0	43.623	1.172	54	99.242	0.881	104	135.898	0.634	154	165.486	0.563
12.5	44.795	1.142	55	100.123	0.872	105	136.532	0.632	155	166.049	0.563
13.0	45.937	1.113	56	100.995	0.863	106	137.164	0.628	156	166.612	0.563
13.5	47.050	1.086	57	101.858	0.855	107	137.792	0.627	157	167.175	0.561
14.0	48.136	1.060	58	102.713	0.846	108	138.419	0.625	158	167.736	0.561
14.5	49.196	1.036	59	103.559	0.838	109	139.044	0.623	159	168.297	0.561
15.0	50.232	1.013	60	104.397	0.830	110	139.667	0.620	160	168.858	0.560
15.5	51.245	0.991	61	105.227	0.823	111	140.287	0.618	161	169.418	0.559
16.0	52.236	0.970	62	106.050	0.815	112	140.905	0.615	162	169.977	0.559
16.5	53.206	0.951	63	106.865	0.808	113	141.520	0.614	163	170.536	0.559
17.0	54.157	0.931	64	107.673	0.801	114	142.134	0.612	164	171.095	0.559
17.5	55.088	0.913	65	108.474	0.795	115	142.746	0.610	165	171.654	0.558
18.0	56.001	0.896	66	109.269	0.788	116	143.356	0.608	166	172.212	0.558
18.5	56.897	0.880	67	110.057	0.781	117	143.964	0.606	167	172.770	0.557
19.0	57.777	0.864	68	110.838	0.776	118	144.570	0.605	168	173.327	0.557
19.5	58.641	0.849	69	111.614	0.769	119	145.175	0.603	169	173.884	0.557
20	59.490	1.657	70	112.383	0.764	120	145.778	0.601	170	174.441	0.557
21	61.147	1.603	71	113.147	0.758	121	146.379	0.599	171	174.998	0.556
22	62.750	1.554	72	113.905	0.752	122	146.978	0.598	172	175.554	0.556
23	64.304	1.509	73	114.657	0.747	123	147.576	0.596	173	176.110	0.556
24	65.813	1.466	74	115.404	0.742	124	148.172	0.595	174	176.666	0.556
25	67.279	1.428	75	116.146	0.737	125	148.767	0.593	175	177.222	0.556
26	68.707	1.393	76	116.883	0.732	126	149.360	0.592	176	177.778	0.555
27	70.100	1.358	77	117.615	0.727	127	149.952	0.590	177	178.333	0.556
28	71.458	1.325	78	118.342	0.722	128	150.542	0.589	178	178.889	0.555
29	72.783	1.295	79	119.064	0.718	129	151.131	0.588	179	179.444	0.556
30	74.078		80	119.782		130	151.719		180	180.000	
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ

$E = M + e \sin E.$

$e = 0.81$

M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	2.628	30	74.782	1.257	80	120.136	0.709	130	151.877	0.582
0.5	2.628	2.604	31	76.039	1.231	81	120.845	0.705	131	152.459	0.581
1.0	5.232	2.560	32	77.270	1.204	82	121.550	0.700	132	153.040	0.580
1.5	7.792	2.499	33	78.474	1.181	83	122.250	0.696	133	153.620	0.579
2.0	10.291	2.423	34	79.655	1.160	84	122.946	0.692	134	154.199	0.578
2.5	12.714	2.340	35	80.815	1.138	85	123.638	0.688	135	154.777	0.577
3.0	15.054	2.251	36	81.953	1.118	86	124.326	0.685	136	155.354	0.576
3.5	17.305	2.161	37	83.071	1.098	87	125.011	0.681	137	155.930	0.574
4.0	19.466	2.071	38	84.169	1.081	88	125.692	0.677	138	156.504	0.573
4.5	21.537	1.986	39	85.250	1.064	89	126.369	0.674	139	157.077	0.572
5.0	23.523	1.902	40	86.314	1.047	90	127.043	0.670	140	157.649	0.571
5.5	25.425	1.824	41	87.361	1.031	91	127.713	0.668	141	158.220	0.571
6.0	27.249	1.750	42	88.392	1.015	92	128.381	0.664	142	158.791	0.569
6.5	28.999	1.682	43	89.407	1.001	93	129.045	0.660	143	159.360	0.568
7.0	30.681	1.616	44	90.408	0.988	94	129.705	0.657	144	159.928	0.567
7.5	32.297	1.557	45	91.396	0.974	95	130.362	0.654	145	160.495	0.567
8.0	33.854	1.500	46	92.370	0.961	96	131.016	0.651	146	161.062	0.566
8.5	35.354	1.447	47	93.331	0.949	97	131.667	0.649	147	161.628	0.565
9.0	36.801	1.399	48	94.280	0.937	98	132.316	0.646	148	162.193	0.565
9.5	38.200	1.354	49	95.217	0.926	99	132.962	0.643	149	162.758	0.563
10.0	39.554	1.312	50	96.143	0.915	100	133.605	0.640	150	163.321	0.563
10.5	40.866	1.271	51	97.058	0.904	101	134.245	0.638	151	163.884	0.562
11.0	42.137	1.233	52	97.962	0.894	102	134.883	0.635	152	164.476	0.561
11.5	43.370	1.198	53	98.856	0.885	103	135.518	0.633	153	165.007	0.560
12.0	44.568	1.166	54	99.741	0.875	104	136.151	0.630	154	165.567	0.560
12.5	45.734	1.136	55	100.616	0.865	105	136.781	0.627	155	166.127	0.560
13.0	46.870	1.106	56	101.481	0.857	106	137.408	0.625	156	166.687	0.559
13.5	47.976	1.079	57	102.338	0.848	107	138.033	0.623	157	167.246	0.558
14.0	49.055	1.053	58	103.186	0.840	108	138.656	0.621	158	167.804	0.558
14.5	50.108	1.028	59	104.026	0.832	109	139.277	0.619	159	168.362	0.558
15.0	51.136	1.006	60	104.858	0.824	110	139.896	0.616	160	168.920	0.557
15.5	52.142	0.984	61	105.682	0.817	111	140.512	0.614	161	169.477	0.556
16.0	53.126	0.962	62	106.499	0.809	112	141.126	0.612	162	170.033	0.556
16.5	54.088	0.943	63	107.308	0.802	113	141.738	0.610	163	170.589	0.556
17.0	55.031	0.924	64	108.110	0.796	114	142.348	0.608	164	171.145	0.555
17.5	55.955	0.906	65	108.906	0.789	115	142.956	0.606	165	171.700	0.555
18.0	56.861	0.889	66	109.695	0.782	116	143.562	0.605	166	172.255	0.555
18.5	57.750	0.872	67	110.477	0.776	117	144.167	0.603	167	172.810	0.554
19.0	58.622	0.857	68	111.253	0.770	118	144.770	0.601	168	173.364	0.554
19.5	59.479	0.842	69	112.023	0.764	119	145.371	0.600	169	173.918	0.554
20	60.321	1.643	70	112.787	0.758	120	145.971	0.598	170	174.472	0.554
21	61.964	1.589	71	113.545	0.753	121	146.569	0.596	171	175.026	0.553
22	63.553	1.541	72	114.298	0.747	122	147.165	0.594	172	175.579	0.553
23	65.094	1.495	73	115.045	0.742	123	147.759	0.593	173	176.132	0.553
24	66.589	1.454	74	115.787	0.737	124	148.352	0.591	174	176.685	0.553
25	68.043	1.415	75	116.524	0.732	125	148.943	0.589	175	177.238	0.553
26	69.458	1.380	76	117.256	0.727	126	149.532	0.588	176	177.791	0.552
27	70.838	1.346	77	117.983	0.723	127	150.120	0.587	177	178.343	0.553
28	72.184	1.314	78	118.706	0.717	128	150.707	0.586	178	178.896	0.552
29	73.498	1.284	79	119.423	0.713	129	151.293	0.584	179	179.448	0.552
30	74.782		80	120.136		130	151.877		180	180.000	
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ

$$E = M + e \sin E.$$

$e = 0.82$											
M	*E*	*Δ*	*M*	*E*	*Δ*	*M*	*E*	*Δ*	*M*	*E*	*Δ*
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	2.773	30	75.482	1.246	80	120.487	0.704	130	152.033	0.579
0.5	2.773	2.748	31	76.728	1.219	81	121.191	0.700	131	152.612	0.578
1.0	5.521	2.685	32	77.947	1.195	82	121.891	0.696	132	153.190	0.577
1.5	8.206	2.613	33	79.142	1.171	83	122.587	0.691	133	153.767	0.576
2.0	10.819	2.522	34	80.313	1.149	84	123.278	0.688	134	154.343	0.574
2.5	13.341	2.423	35	81.462	1.128	85	123.966	0.684	135	154.917	0.573
3.0	15.764	2.320	36	82.590	1.109	86	124.650	0.680	136	155.490	0.573
3.5	18.084	2.216	37	83.699	1.089	87	125.830	0.677	137	156.063	0.571
4.0	20.300	2.115	38	84.788	1.072	88	126.007	0.673	138	156.634	0.570
4.5	22.415	2.021	39	85.860	1.054	89	126.680	0.669	139	157.204	0.569
5.0	24.436	1.927	40	86.914	1.038	90	127.349	0.667	140	157.773	0.568
5.5	26.363	1.843	41	87.952	1.023	91	128.016	0.663	141	158.341	0.567
6.0	28.206	1.764	42	88.975	1.008	92	128.679	0.659	142	158.908	0.567
6.5	29.970	1.690	43	89.983	0.993	93	129.338	0.656	143	159.475	0.565
7.0	31.660	1.623	44	90.976	0.979	94	129.994	0.653	144	160.040	0.564
7.5	33.283	1.559	45	91.955	0.967	95	130.647	0.650	145	160.604	0.563
8.0	34.842	1.500	46	92.922	0.953	96	131.297	0.647	146	161.167	0.563
8.5	36.342	1.446	47	93.875	0.942	97	131.944	0.645	147	161.730	0.562
9.0	37.788	1.396	48	94.817	0.930	98	132.589	0.642	148	162.292	0.561
9.5	39.184	1.350	49	95.747	0.918	99	133.231	0.639	149	162.853	0.560
10.0	40.534	1.306	50	96.665	0.907	100	133.870	0.637	150	163.413	0.560
10.5	41.840	1.265	51	97.572	0.898	101	134.507	0.633	151	163.973	0.559
11.0	43.105	1.227	52	98.470	0.887	102	135.140	0.631	152	164.532	0.558
11.5	44.332	1.192	53	99.357	0.878	103	135.771	0.629	153	165.090	0.557
12.0	45.524	1.159	54	100.235	0.868	104	136.400	0.626	154	165.647	0.557
12.5	46.683	1.128	55	101.103	0.859	105	137.026	0.624	155	166.204	0.556
13.0	47.811	1.099	56	101.962	0.851	106	137.650	0.621	156	166.760	0.556
13.5	48.910	1.071	57	102.813	0.842	107	138.271	0.619	157	167.316	0.555
14.0	49.981	1.045	58	103.655	0.833	108	138.890	0.617	158	167.871	0.556
14.5	51.026	1.020	59	104.488	0.826	109	139.507	0.615	159	168.427	0.555
15.0	52.046	0.997	60	105.314	0.818	110	140.122	0.613	160	168.982	0.554
15.5	53.043	0.976	61	106.132	0.811	111	140.735	0.611	161	169.536	0.553
16.0	54.019	0.954	62	106.943	0.804	112	141.346	0.609	162	170.089	0.553
16.5	54.973	0.935	63	107.747	0.796	113	141.955	0.607	163	170.642	0.553
17.0	55.908	0.916	64	108.543	0.790	114	142.562	0.605	164	171.195	0.552
17.5	56.824	0.899	65	109.333	0.784	115	143.167	0.602	165	171.747	0.552
18.0	57.723	0.781	66	110.117	0.777	116	143.769	0.601	166	172.299	0.552
18.5	58.604	0.764	67	110.894	0.770	117	144.370	0.599	167	172.851	0.551
19.0	59.468	0.749	68	111.664	0.764	118	144.969	0.598	168	173.402	0.550
19.5	60.317	0.735	69	112.428	0.759	119	145.567	0.595	169	173.952	0.550
20	61.152	1.627	70	113.187	0.753	120	146.162	0.594	170	174.502	0.550
21	62.779	1.575	71	113.940	0.748	121	146.756	0.592	171	175.052	0.550
22	64.354	1.528	72	114.688	0.742	122	147.348	0.591	172	175.602	0.550
23	65.882	1.481	73	115.430	0.737	123	147.939	0.589	173	176.152	0.550
24	67.363	1.441	74	116.167	0.732	124	148.528	0.588	174	176.702	0.550
25	68.804	1.402	75	116.899	0.727	125	149.116	0.587	175	177.252	0.550
26	70.206	1.367	76	117.626	0.722	126	149.703	0.584	176	177.802	0.550
27	71.573	1.334	77	118.348	0.717	127	150.287	0.583	177	178.352	0.550
28	72.907	1.302	78	119.065	0.713	128	150.870	0.582	178	178.902	0.549
29	74.209	1.273	79	119.778	0.709	129	151.452	0.581	179	179.451	0.549
30	75.482		80	120.487		130	152.033		180	180.000	

$E = M + e \sin E.$

$e = 0.83$

M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	2.935	30	76.178	1.235	80	120.834	0.699	130	152.188	0.576
0.5	2.935	2.898	31	77.413	1.208	81	121.533	0.695	131	152.764	0.575
1.0	5.833	2.830	32	78.621	1.184	82	122.228	0.692	132	153.339	0.574
1.5	8.663	2.735	33	79.805	1.161	83	122.920	0.687	133	153.913	0.572
2.0	11.398	2.626	34	80.966	1.139	84	123.607	0.683	134	154.485	0.571
2.5	14.024	2.508	35	82.105	1.118	85	124.290	0.680	135	155.056	0.570
3.0	16.532	2.487	36	83.223	1.099	86	124.970	0.675	136	155.626	0.569
3.5	18.919	2.269	37	84.322	1.080	87	125.645	0.672	137	156.195	0.568
4.0	21.188	2.157	38	85.402	1.063	88	126.317	0.669	138	156.763	0.567
4.5	23.345	2.048	39	86.465	1.046	89	126.986	0.666	139	157.330	0.566
5.0	25.393	1.950	40	87.511	1.030	90	127.652	0.662	140	157.896	0.565
5.5	27.343	1.858	41	88.541	1.013	91	128.314	0.658	141	158.461	0.564
6.0	29.201	1.774	42	89.554	0.999	92	128.972	0.655	142	159.025	0.563
6.5	30.975	1.696	43	90.553	0.986	93	129.627	0.653	143	159.588	0.562
7.0	32.671	1.625	44	91.539	0.971	94	130.280	0.650	144	160.150	0.561
7.5	34.296	1.559	45	92.510	0.959	95	130.930	0.647	145	160.711	0.560
8.0	35.855	1.509	46	93.469	0.946	96	131.577	0.643	146	161.271	0.559
8.5	37.364	1.432	47	94.415	0.933	97	132.220	0.640	147	161.830	0.559
9.0	38.796	1.391	48	95.348	0.923	98	132.860	0.637	148	162.389	0.558
9.5	40.187	1.343	49	96.271	0.911	99	133.497	0.635	149	162.947	0.557
10.0	41.530	1.299	50	97.182	0.900	100	134.132	0.632	150	163.504	0.556
10.5	42.829	1.257	51	98.082	0.891	101	134.764	0.630	151	164.060	0.556
11.0	44.086	1.219	52	98.973	0.881	102	135.394	0.627	152	164.616	0.555
11.5	45.305	1.184	53	99.854	0.871	103	136.021	0.625	153	165.171	0.554
12.0	46.489	1.151	54	100.725	0.861	104	136.646	0.623	154	165.725	0.554
12.5	47.640	1.119	55	101.586	0.853	105	137.269	0.620	155	166.279	0.554
13.0	48.759	1.090	56	102.439	0.845	106	137.889	0.618	156	166.833	0.553
13.5	49.849	1.062	57	103.284	0.835	107	138.507	0.616	157	167.386	0.552
14.0	50.911	1.037	58	104.119	0.827	108	139.123	0.613	158	167.938	0.552
14.5	51.948	1.012	59	104.946	0.820	109	139.736	0.611	159	168.490	0.552
15.0	52.960	0.988	60	105.766	0.811	110	140.347	0.609	160	169.042	0.551
15.5	53.948	0.966	61	106.578	0.805	111	140.956	0.607	161	169.593	0.550
16.0	54.914	0.946	62	107.383	0.799	112	141.563	0.605	162	170.143	0.550
16.5	55.860	0.927	63	108.182	0.791	113	142.168	0.603	163	170.693	0.550
17.0	56.787	0.908	64	108.973	0.784	114	142.771	0.601	164	171.243	0.549
17.5	57.695	0.890	65	109.757	0.777	115	143.372	0.599	165	171.792	0.549
18.0	58.585	0.873	66	110.534	0.771	116	143.971	0.598	166	172.341	0.549
18.5	59.458	0.856	67	111.305	0.765	117	144.569	0.596	167	172.890	0.548
19.0	60.314	0.841	68	112.070	0.759	118	145.165	0.594	168	173.438	0.547
19.5	61.155	0.827	69	112.829	0.754	119	145.759	0.592	169	173.985	0.547
20	61.982	1.611	70	113.583	0.748	120	146.351	0.591	170	174.532	0.547
21	63.593	1.561	71	114.331	0.743	121	146.942	0.589	171	175.079	0.547
22	65.154	1.513	72	115.074	0.737	122	147.531	0.587	172	175.626	0.547
23	66.667	1.467	73	115.811	0.732	123	148.118	0.585	173	176.173	0.547
24	68.134	1.428	74	116.543	0.727	124	148.703	0.585	174	176.720	0.547
25	69.562	1.389	75	117.270	0.722	125	149.288	0.583	175	177.267	0.547
26	70.951	1.354	76	117.992	0.717	126	149.871	0.581	176	177.814	0.547
27	72.305	1.321	77	118.709	0.713	127	150.452	0.580	177	178.361	0.547
28	73.626	1.290	78	119.422	0.708	128	151.032	0.579	178	178.908	0.546
29	74.916	1.262	79	120.130	0.704	129	151.611	0.577	179	179.454	0.546
30	76.178		80	120.834		130	152.188		180	180.000	
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ

$E = M + e \sin E.$

$e = 0.84$											
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	3.117	30	76.870	1.223	80	121.177	0.695	130	152.342	0.573
0.5	3.117	3.070	31	78.093	1.197	81	121.872	0.691	131	152.915	0.571
1.0	6.187	2.983	32	79.290	1.173	82	122.563	0.687	132	153.486	0.571
1.5	9.170	2.865	33	80.463	1.151	83	123.250	0.682	133	154.057	0.569
2.0	12.035	2.734	34	81.614	1.129	84	123.932	0.679	134	154.626	0.568
2.5	14.769	2.593	35	82.743	1.109	85	124.611	0.675	135	155.194	0.566
3.0	17.362	2.452	36	83.852	1.089	86	125.286	0.671	136	155.760	0.565
3.5	19.814	2.318	37	84.941	1.071	87	125.957	0.668	137	156.325	0.565
4.0	22.132	2.192	38	86.012	1.054	88	126.625	0.665	138	156.890	0.564
4.5	24.324	2.076	39	87.066	1.036	89	127.290	0.661	139	157.454	0.563
5.0	26.400	1.966	40	88.102	1.021	90	127.951	0.658	140	158.017	0.562
5.5	28.366	1.869	41	89.123	1.005	91	128.609	0.654	141	158.579	0.561
6.0	30.235	1.779	42	90.128	0.991	92	129.263	0.651	142	159.140	0.560
6.5	32.014	1.699	43	91.119	0.978	93	129.914	0.649	143	159.700	0.558
7.0	33.713	1.623	44	92.097	0.963	94	130.563	0.646	144	160.258	0.558
7.5	35.336	1.556	45	93.060	0.951	95	131.209	0.643	145	160.816	0.557
8.0	36.892	1.493	46	94.011	0.938	96	131.852	0.639	146	161.373	0.556
8.5	38.385	1.436	47	94.949	0.926	97	132.491	0.636	147	161.929	0.556
9.0	39.821	1.384	48	95.875	0.916	98	133.127	0.633	148	162.485	0.555
9.5	41.205	1.335	49	96.791	0.904	99	133.760	0.631	149	163.040	0.554
10.0	42.540	1.290	50	97.695	0.893	100	134.391	0.629	150	163.594	0.553
10.5	43.830	1.248	51	98.588	0.884	101	135.020	0.626	151	164.147	0.553
11.0	45.078	1.210	52	99.472	0.874	102	135.646	0.623	152	164.700	0.552
11.5	46.288	1.175	53	100.346	0.864	103	136.269	0.621	153	165.252	0.551
12.0	47.463	1.141	54	101.210	0.855	104	136.890	0.619	154	165.803	0.551
12.5	48.604	1.109	55	102.065	0.847	105	137.509	0.616	155	166.354	0.550
13.0	49.713	1.080	56	102.912	0.838	106	138.125	0.614	156	166.904	0.550
13.5	50.793	1.053	57	103.750	0.829	107	138.739	0.612	157	167.454	0.550
14.0	51.846	1.028	58	104.579	0.821	108	139.351	0.610	158	168.004	0.549
14.5	52.874	1.003	59	105.400	0.814	109	139.961	0.608	159	168.553	0.548
15.0	53.877	0.978	60	106.214	0.806	110	140.569	0.606	160	169.101	0.548
15.5	54.855	0.956	61	107.020	0.799	111	141.175	0.603	161	169.649	0.547
16.0	55.811	0.937	62	107.819	0.792	112	141.778	0.601	162	170.196	0.547
16.5	56.748	0.918	63	108.611	0.786	113	142.379	0.600	163	170.743	0.547
17.0	57.666	0.899	64	109.397	0.779	114	142.979	0.598	164	171.290	0.546
17.5	58.565	0.882	65	110.176	0.772	115	143.577	0.596	165	171.836	0.546
18.0	59.447	0.864	66	110.948	0.766	116	144.173	0.593	166	172.382	0.545
18.5	60.311	0.848	67	111.714	0.760	117	144.766	0.592	167	172.927	0.545
19.0	61.159	0.833	68	112.474	0.753	118	145.358	0.590	168	173.472	0.545
19.5	61.992	0.818	69	113.227	0.748	119	145.948	0.588	169	174.017	0.545
20	62.810	1.596	70	113.975	0.743	120	146.536	0.587	170	174.562	0.544
21	64.406	1.545	71	114.718	0.738	121	147.123	0.586	171	175.106	0.544
22	65.951	1.497	72	115.456	0.732	122	147.709	0.584	172	175.650	0.544
23	67.448	1.454	73	116.188	0.727	123	148.293	0.583	173	176.194	0.544
24	68.902	1.414	74	116.915	0.722	124	148.876	0.582	174	176.738	0.544
25	70.316	1.376	75	117.637	0.717	125	149.458	0.580	175	177.282	0.544
26	71.692	1.341	76	118.354	0.713	126	150.038	0.578	176	177.826	0.544
27	73.033	1.309	77	119.067	0.708	127	150.616	0.576	177	178.370	0.544
28	74.342	1.278	78	119.775	0.703	128	151.192	0.575	178	178.914	0.543
29	75.620	1.250	79	120.478	0.699	129	151.767	0.575	179	179.457	0.543
30	76.870		80	121.177		130	152.342		180	180.000	
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ

$E = M + e \sin E.$

$e = 0.85$

M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	3.327	30	77.558	1.211	80	121.517	0.691	130	152.493	0.569
0.5	3.327	3.258	31	78.769	1.186	81	122.208	0.686	131	153.062	0.568
1.0	6.585	3.150	32	79.955	1.162	82	122.894	0.682	132	153.630	0.568
1.5	9.735	3.005	33	81.117	1.140	83	123.576	0.678	133	154.198	0.566
2.0	12.740	2.842	34	82.257	1.119	84	124.254	0.674	134	154.764	0.565
2.5	15.582	2.676	35	83.376	1.099	85	124.928	0.671	135	155.329	0.563
3.0	18.258	2.514	36	84.475	1.080	86	125.599	0.668	136	155.892	0.562
3.5	20.772	2.362	37	85.555	1.062	87	126.267	0.663	137	156.455	0.561
4.0	23.134	2.222	38	86.617	1.044	88	126.930	0.660	138	157.016	0.561
4.5	25.356	2.094	39	87.661	1.028	89	127.590	0.657	139	157.577	0.560
5.0	27.450	1.980	40	88.689	1.012	90	128.247	0.654	140	158.137	0.558
5.5	29.430	1.875	41	89.701	0.997	91	128.901	0.650	141	158.695	0.558
6.0	31.305	1.781	42	90.698	0.982	92	129.551	0.647	142	159.253	0.556
6.5	33.086	1.696	43	91.680	0.969	93	130.198	0.645	143	159.809	0.556
7.0	34.782	1.620	44	92.649	0.956	94	130.843	0.642	144	160.365	0.555
7.5	36.402	1.548	45	93.605	0.943	95	131.485	0.638	145	160.920	0.554
8.0	37.950	1.486	46	94.548	0.931	96	132.123	0.635	146	161.474	0.554
8.5	39.436	1.427	47	95.479	0.919	97	132.758	0.632	147	162.028	0.552
9.0	40.863	1.374	48	96.398	0.908	98	133.390	0.630	148	162.580	0.552
9.5	42.237	1.325	49	97.306	0.897	99	134.020	0.628	149	163.132	0.551
10.0	43.562	1.280	50	98.203	0.887	100	134.648	0.625	150	163.683	0.550
10.5	44.842	1.238	51	99.090	0.876	101	135.273	0.622	151	164.233	0.550
11.0	46.080	1.199	52	99.966	0.867	102	135.895	0.620	152	164.783	0.549
11.5	47.279	1.164	53	100.833	0.858	103	136.515	0.618	153	165.332	0.548
12.0	48.443	1.130	54	101.691	0.848	104	137.133	0.615	154	165.880	0.548
12.5	49.573	1.099	55	102.539	0.840	105	137.748	0.612	155	166.428	0.548
13.0	50.672	1.070	56	103.379	0.832	106	138.360	0.610	156	166.976	0.547
13.5	51.742	1.042	57	104.211	0.823	107	138.970	0.608	157	167.523	0.546
14.0	52.784	1.016	58	105.034	0.815	108	139.578	0.606	158	168.069	0.546
14.5	53.800	0.992	59	105.849	0.808	109	140.184	0.604	159	168.615	0.545
15.0	54.792	0.969	60	106.657	0.800	110	140.788	0.602	160	169.160	0.545
15.5	55.761	0.948	61	107.457	0.794	111	141.390	0.600	161	169.705	0.544
16.0	56.709	0.927	62	108.251	0.786	112	141.990	0.598	162	170.249	0.544
16.5	57.636	0.908	63	109.037	0.780	113	142.588	0.596	163	170.793	0.544
17.0	58.544	0.890	64	109.817	0.773	114	143.184	0.594	164	171.337	0.543
17.5	59.434	0.872	65	110.590	0.767	115	143.778	0.593	165	171.880	0.543
18.0	60.306	0.855	66	111.357	0.761	116	144.371	0.591	166	172.423	0.543
18.5	61.161	0.840	67	112.118	0.755	117	144.962	0.588	167	172.966	0.542
19.0	62.001	0.824	68	112.873	0.748	118	145.550	0.587	168	173.508	0.542
19.5	62.825	0.811	69	113.621	0.743	119	146.137	0.585	169	174.050	0.541
20	63.636	1.580	70	114.364	0.738	120	146.722	0.584	170	174.591	0.541
21	65.216	1.529	71	115.102	0.732	121	147.306	0.582	171	175.132	0.541
22	66.745	1.483	72	115.834	0.728	122	147.888	0.581	172	175.673	0.541
23	68.228	1.439	73	116.562	0.722	123	148.469	0.579	173	176.214	0.541
24	69.667	1.400	74	117.284	0.716	124	149.048	0.578	174	176.755	0.541
25	71.067	1.362	75	118.000	0.712	125	149.626	0.576	175	177.296	0.541
26	72.429	1.329	76	118.712	0.708	126	150.202	0.575	176	177.837	0.541
27	73.758	1.296	77	119.420	0.703	127	150.777	0.574	177	178.378	0.541
28	75.054	1.266	78	120.123	0.699	128	151.351	0.572	178	178.919	0.541
29	76.320	1.238	79	120.822	0.695	129	151.923	0.570	179	179.460	0.540
30	77.558		80	121.517		130	152.493		180	180.000	
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ

$E = M + e \sin E.$

$e = 0.86$											
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	3.557	30	78.240	1.199	80	121.854	0.686	130	152.643	0.567
0.5	3.557	3.477	31	79.439	1.175	81	122.540	0.682	131	153.210	0.565
1.0	7.034	3.333	32	80.614	1.152	82	123.222	0.677	132	153.775	0.564
1.5	10.367	3.150	33	81.766	1.130	83	123.899	0.674	133	154.339	0.562
2.0	13.517	2.952	34	82.896	1.108	84	124.573	0.670	134	154.901	0.562
2.5	16.469	2.756	35	84.004	1.089	85	125.243	0.666	135	155.463	0.560
3.0	19.225	2.569	36	85.093	1.071	86	125.909	0.663	136	156.023	0.559
3.5	21.794	2.400	37	86.164	1.052	87	126.572	0.660	137	156.582	0.559
4.0	24.194	2.246	38	87.216	1.035	88	127.232	0.657	138	157.141	0.557
4.5	26.440	2.108	39	88.251	1.019	89	127.889	0.653	139	157.698	0.557
5.0	28.548	1.985	40	89.270	1.004	90	128.542	0.649	140	158.255	0.556
5.5	30.533	1.876	41	90.274	0.989	91	129.191	0.646	141	158.811	0.555
6.0	32.409	1.778	42	91.263	0.974	92	129.837	0.643	142	159.366	0.553
6.5	34.187	1.690	43	92.237	0.960	93	130.480	0.640	143	159.919	0.553
7.0	35.877	1.611	44	93.197	0.948	94	131.120	0.637	144	160.472	0.552
7.5	37.488	1.540	45	94.145	0.936	95	131.757	0.634	145	161.024	0.551
8.0	39.028	1.474	46	95.081	0.923	96	132.391	0.632	146	161.575	0.550
8.5	40.502	1.414	47	96.004	0.912	97	133.023	0.629	147	162.125	0.549
9.0	41.916	1.364	48	96.916	0.901	98	133.652	0.626	148	162.674	0.549
9.5	43.280	1.315	49	97.817	0.890	99	134.278	0.624	149	163.223	0.548
10.0	44.595	1.268	50	98.707	0.880	100	134.902	0.621	150	163.771	0.547
10.5	45.863	1.226	51	99.587	0.869	101	135.523	0.619	151	164.318	0.547
11.0	47.089	1.188	52	100.456	0.860	102	136.142	0.616	152	164.865	0.546
11.5	48.277	1.152	53	101.316	0.851	103	136.758	0.613	153	165.411	0.546
12.0	49.429	1.118	54	102.167	0.843	104	137.371	0.611	154	165.957	0.545
12.5	50.547	1.087	55	103.010	0.834	105	137.982	0.609	155	166.502	0.544
13.0	51.634	1.059	56	103.844	0.825	106	138.591	0.607	156	167.046	0.544
13.5	52.693	1.031	57	104.669	0.817	107	139.198	0.605	157	167.590	0.543
14.0	53.724	1.006	58	105.486	0.809	108	139.803	0.602	158	168.133	0.543
14.5	54.730	0.981	59	106.295	0.802	109	140.405	0.600	159	168.676	0.542
15.0	55.711	0.959	60	107.097	0.795	110	141.005	0.598	160	169.218	0.542
15.5	56.670	0.937	61	107.892	0.787	111	141.603	0.597	161	169.760	0.542
16.0	57.607	0.918	62	108.679	0.781	112	142.200	0.595	162	170.302	0.541
16.5	58.525	0.898	63	109.460	0.774	113	142.795	0.592	163	170.843	0.540
17.0	59.423	0.880	64	110.234	0.767	114	143.387	0.591	164	171.383	0.540
17.5	60.303	0.862	65	111.001	0.761	115	143.978	0.589	165	171.923	0.540
18.0	61.165	0.846	66	111.762	0.755	116	144.567	0.587	166	172.463	0.540
18.5	62.011	0.831	67	112.517	0.750	117	145.154	0.585	167	173.003	0.539
19.0	62.842	0.816	68	113.267	0.744	118	145.739	0.584	168	173.542	0.539
19.5	63.658	0.802	69	114.011	0.737	119	146.323	0.582	169	174.081	0.539
20	64.460	1.563	70	114.748	0.733	120	146.905	0.580	170	174.620	0.539
21	66.023	1.512	71	115.481	0.728	121	147.485	0.579	171	175.159	0.538
22	67.535	1.467	72	116.209	0.722	122	148.064	0.577	172	175.697	0.538
23	69.002	1.425	73	116.931	0.717	123	148.641	0.576	173	176.235	0.538
24	70.427	1.386	74	117.648	0.712	124	149.217	0.574	174	176.773	0.538
25	71.813	1.349	75	118.360	0.708	125	149.791	0.573	175	177.311	0.538
26	73.162	1.315	76	119.068	0.703	126	150.364	0.572	176	177.849	0.538
27	74.477	1.284	77	119.771	0.699	127	150.936	0.571	177	178.387	0.538
28	75.761	1.254	78	120.470	0.694	128	151.507	0.569	178	178.925	0.538
29	77.015	1.225	79	121.164	0.690	129	152.076	0.567	179	179.463	0.537
30	78.240		80	121.854		130	152.643		180	180.000	
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ

$$E = M + e \sin E.$$

$e = 0.87$

M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	3.827	30	78.919	1.187	80	122.187	0.681	130	152.791	0.564
0.5	3.827	3.719	31	80.106	1.163	81	122.868	0.677	131	153.355	0.562
1.0	7.546	3.532	32	81.269	1.141	82	123.545	0.674	132	153.917	0.561
1.5	11.078	3.300	33	82.410	1.120	83	124.219	0.670	133	154.478	0.559
2.0	14.378	3.060	34	83.530	1.099	84	124.889	0.665	134	155.037	0.559
2.5	17.438	2.828	35	84.629	1.079	85	125.554	0.662	135	155.596	0.557
3.0	20.266	2.618	36	85.708	1.060	86	126.216	0.659	136	156.153	0.556
3.5	22.884	2.428	37	86.768	1.043	87	126.875	0.656	137	156.709	0.556
4.0	25.312	2.262	38	87.811	1.026	88	127.531	0.652	138	157.265	0.554
4.5	27.574	2.115	39	88.837	1.010	89	128.183	0.649	139	157.819	0.553
5.0	29.689	1.985	40	89.847	0.995	90	128.832	0.645	140	158.372	0.553
5.5	31.674	1.872	41	90.842	0.980	91	129.477	0.642	141	158.925	0.552
6.0	33.546	1.770	42	91.822	0.966	92	130.119	0.639	142	159.477	0.550
6.5	35.316	1.680	43	92.788	0.953	93	130.758	0.636	143	160.027	0.550
7.0	36.996	1.600	44	93.741	0.940	94	131.394	0.633	144	160.577	0.549
7.5	38.596	1.527	45	94.681	0.928	95	132.027	0.631	145	161.126	0.548
8.0	40.123	1.462	46	95.609	0.916	96	132.658	0.628	146	161.674	0.547
8.5	41.585	1.402	47	96.525	0.904	97	133.286	0.625	147	162.221	0.546
9.0	42.987	1.349	48	97.429	0.894	98	133.911	0.622	148	162.767	0.546
9.5	44.336	1.299	49	98.323	0.882	99	134.533	0.620	149	163.313	0.545
10.0	45.635	1.256	50	99.205	0.873	100	135.153	0.617	150	163.858	0.544
10.5	46.891	1.214	51	100.078	0.863	101	135.770	0.615	151	164.402	0.544
11.0	48.105	1.175	52	100.941	0.854	102	136.385	0.613	152	165.026	0.543
11.5	49.280	1.138	53	101.795	0.844	103	136.998	0.610	153	165.429	0.543
12.0	50.418	1.105	54	102.639	0.836	104	137.608	0.607	154	166.032	0.542
12.5	51.523	1.075	55	103.475	0.827	105	138.215	0.605	155	166.574	0.541
13.0	52.598	1.047	56	104.302	0.819	106	138.820	0.603	156	167.115	0.541
13.5	53.645	1.020	57	105.121	0.811	107	139.423	0.601	157	167.656	0.540
14.0	54.665	0.994	58	105.932	0.804	108	140.024	0.599	158	168.196	0.540
14.5	55.659	0.970	59	106.736	0.796	109	140.623	0.597	159	168.736	0.539
15.0	56.629	0.948	60	107.532	0.789	110	141.220	0.595	160	169.275	0.539
15.5	57.577	0.926	61	108.321	0.781	111	141.815	0.593	161	169.814	0.539
16.0	58.503	0.907	62	109.102	0.775	112	142.408	0.591	162	170.353	0.538
16.5	59.410	0.888	63	109.877	0.769	113	142.999	0.589	163	170.891	0.538
17.0	60.298	0.870	64	110.646	0.762	114	143.588	0.587	164	171.429	0.537
17.5	61.168	0.853	65	111.408	0.756	115	144.175	0.586	165	171.966	0.537
18.0	62.021	0.837	66	112.164	0.750	116	144.761	0.584	166	172.503	0.537
18.5	62.858	0.822	67	112.914	0.744	117	145.345	0.582	167	173.040	0.537
19.0	63.680	0.806	68	113.658	0.738	118	145.927	0.581	168	173.577	0.536
19.5	64.486	0.793	69	114.396	0.733	119	146.508	0.579	169	174.113	0.536
20	65.279	1.547	70	115.129	0.728	120	147.087	0.577	170	174.649	0.536
21	66.826	1.496	71	115.857	0.722	121	147.664	0.575	171	175.185	0.536
22	68.322	1.451	72	116.579	0.717	122	148.239	0.574	172	175.721	0.535
23	69.773	1.410	73	117.296	0.713	123	148.813	0.572	173	176.256	0.535
24	71.183	1.372	74	118.009	0.707	124	149.385	0.571	174	176.791	0.535
25	72.555	1.335	75	118.716	0.703	125	149.956	0.570	175	177.326	0.535
26	73.890	1.301	76	119.419	0.698	126	150.526	0.568	176	177.861	0.535
27	75.191	1.271	77	120.117	0.695	127	151.094	0.567	177	178.396	0.535
28	76.462	1.243	78	120.812	0.690	128	151.661	0.566	178	178.931	0.535
29	77.705	1.214	79	121.502	0.685	129	152.227	0.564	179	179.466	0.534
30	78.919		80	122.187		130	152.791		180	180.000	
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ

$$E = M + e \sin E.$$

M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	4.140	30	79.591	1.177	80	122.516	0.677	130	152.938	0.560
0.5	4.140	3.993	31	80.768	1.152	81	123.193	0.673	131	153.498	0.559
1.0	8.133	3.744	32	81.920	1.130	82	123.866	0.669	132	154.057	0.558
1.5	11.877	3.454	33	83.050	1.109	83	124.535	0.665	133	154.615	0.556
2.0	15.331	3.160	34	84.159	1.088	84	125.200	0.662	134	155.171	0.556
2.5	18.491	2.893	35	85.247	1.069	85	125.862	0.658	135	155.727	0.554
3.0	21.384	2.656	36	86.316	1.051	86	126.520	0.655	136	156.281	0.553
3.5	24.040	2.448	37	87.367	1.034	87	127.175	0.651	137	156.834	0.553
4.0	26.488	2.271	38	88.401	1.017	88	127.826	0.648	138	157.387	0.552
4.5	28.759	2.112	39	89.418	1.001	89	128.474	0.644	139	157.939	0.550
5.0	30.871	1.979	40	90.419	0.986	90	129.118	0.641	140	158.489	0.550
5.5	32.850	1.862	41	91.405	0.972	91	129.759	0.639	141	159.039	0.548
6.0	34.712	1.758	42	92.377	0.958	92	130.398	0.636	142	159.587	0.548
6.5	36.470	1.666	43	93.335	0.944	93	131.034	0.632	143	160.135	0.547
7.0	38.136	1.586	44	94.279	0.932	94	131.666	0.629	144	160.682	0.545
7.5	39.722	1.512	45	95.211	0.921	95	132.295	0.627	145	161.227	0.545
8.0	41.234	1.447	46	96.132	0.909	96	132.922	0.624	146	161.772	0.544
8.5	42.681	1.387	47	97.041	0.897	97	133.546	0.621	147	162.316	0.544
9.0	44.068	1.333	48	97.938	0.886	98	134.167	0.619	148	162.860	0.543
9.5	45.401	1.283	49	98.824	0.876	99	134.786	0.616	149	163.403	0.541
10.0	46.684	1.241	50	99.700	0.866	100	135.402	0.613	150	163.944	0.541
10.5	47.925	1.200	51	100.566	0.856	101	136.015	0.611	151	164.485	0.541
11.0	49.125	1.160	52	101.422	0.847	102	136.626	0.609	152	165.026	0.541
11.5	50.285	1.125	53	102.269	0.838	103	137.235	0.606	153	165.567	0.540
12.0	51.410	1.092	54	103.107	0.829	104	137.841	0.604	154	166.107	0.539
12.5	52.502	1.062	55	103.936	0.821	105	138.445	0.602	155	166.646	0.538
13.0	53.564	1.034	56	104.757	0.813	106	139.047	0.600	156	167.184	0.538
13.5	54.598	1.007	57	105.570	0.805	107	139.647	0.597	157	167.722	0.537
14.0	55.605	0.982	58	106.375	0.798	108	140.244	0.595	158	168.259	0.537
14.5	56.587	0.959	59	107.173	0.790	109	140.839	0.594	159	168.796	0.536
15.0	57.546	0.936	60	107.963	0.783	110	141.433	0.592	160	169.332	0.536
15.5	58.482	0.916	61	108.746	0.776	111	142.025	0.589	161	169.868	0.536
16.0	59.398	0.896	62	109.522	0.769	112	142.614	0.587	162	170.404	0.535
16.5	60.294	0.878	63	110.291	0.763	113	143.201	0.586	163	170.939	0.535
17.0	61.172	0.860	64	111.054	0.757	114	143.787	0.584	164	171.474	0.535
17.5	62.032	0.843	65	111.811	0.750	115	144.371	0.582	165	172.009	0.534
18.0	62.875	0.827	66	112.561	0.744	116	144.953	0.581	166	172.543	0.534
18.5	63.702	0.812	67	113.305	0.739	117	145.534	0.579	167	173.077	0.534
19.0	64.514	0.797	68	114.044	0.734	118	146.113	0.577	168	173.611	0.533
19.5	65.311	0.784	69	114.778	0.728	119	146.690	0.576	169	174.144	0.533
20	66.095	1.529	70	115.506	0.723	120	147.266	0.574	170	174.677	0.533
21	67.624	1.480	71	116.229	0.717	121	147.840	0.572	171	175.210	0.533
22	69.104	1.436	72	116.946	0.712	122	148.412	0.571	172	175.743	0.533
23	70.540	1.395	73	117.658	0.708	123	148.983	0.569	173	176.276	0.532
24	71.935	1.357	74	118.366	0.703	124	149.552	0.568	174	176.808	0.532
25	73.292	1.321	75	119.069	0.698	125	150.120	0.566	175	177.340	0.532
26	74.613	1.288	76	119.767	0.694	126	150.686	0.565	176	177.872	0.532
27	75.901	1.258	77	120.461	0.689	127	151.251	0.564	177	178.404	0.532
28	77.159	1.230	78	121.150	0.685	128	151.815	0.562	178	178.936	0.532
29	78.389	1.202	79	121.835	0.681	129	152.377	0.561	179	179.468	0.532
30	79.591		80	122.516		130	152.938		180	180.000	
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ

(e = 0.88)

$E = M + e \sin E.$

$e = 0.89$											
M	*E*	Δ	*M*	*E*	Δ	*M*	*E*	Δ	*M*	*E*	Δ
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	4.508	30	80.258	1.165	80	122.842	0.672	130	153.083	0.557
0.5	4.508	4.302	31	81.423	1.142	81	123.514	0.669	131	153.640	0.556
1.0	8.810	3.971	32	82.565	1.119	82	124.683	0.665	132	154.196	0.555
1.5	12.781	3.602	33	83.684	1.098	83	124.848	0.661	133	154.751	0.553
2.0	16.383	3.253	34	84.782	1.078	84	125.509	0.657	134	155.304	0.553
2.5	19.636	2.944	35	85.860	1.060	85	126.166	0.654	135	155.857	0.551
3.0	22.580	2.681	36	86.920	1.042	86	126.820	0.651	136	156.408	0.551
3.5	25.261	2.457	37	87.962	1.024	87	127.471	0.647	137	156.959	0.549
4.0	27.718	2.267	38	88.986	1.008	88	128.118	0.644	138	157.508	0.549
4.5	29.985	2.106	39	89.994	0.992	89	128.762	0.641	139	158.057	0.547
5.0	32.091	1.966	40	90.986	0.978	90	129.403	0.637	140	158.604	0.547
5.5	34.057	1.847	41	91.964	0.963	91	130.040	0.635	141	159.151	0.545
6.0	35.904	1.741	42	92.927	0.949	92	130.675	0.631	142	159.696	0.545
6.5	37.645	1.649	43	93.876	0.937	93	131.306	0.628	143	160.241	0.544
7.0	39.294	1.568	44	94.813	0.925	94	131.934	0.625	144	160.785	0.542
7.5	40.862	1.494	45	95.738	0.912	95	132.559	0.623	145	161.327	0.542
8.0	42.356	1.430	46	96.650	0.901	96	133.182	0.621	146	161.869	0.541
8.5	43.786	1.370	47	97.551	0.890	97	133.803	0.618	147	162.410	0.541
9.0	45.156	1.316	48	98.441	0.879	98	134.421	0.615	148	162.951	0.540
9.5	46.472	1.267	49	99.320	0.870	99	135.036	0.612	149	163.491	0.539
10.0	47.739	1.226	50	100.190	0.859	100	135.648	0.609	150	164.030	0.538
10.5	48.965	1.182	51	101.049	0.849	101	136.257	0.607	151	164.568	0.538
11.0	50.147	1.146	52	101.898	0.840	102	136.864	0.605	152	165.106	0.538
11.5	51.293	1.110	53	102.738	0.832	103	137.469	0.603	153	165.644	0.537
12.0	52.403	1.078	54	103.570	0.823	104	138.072	0.601	154	166.181	0.536
12.5	53.481	1.048	55	104.393	0.815	105	138.673	0.599	155	166.717	0.535
13.0	54.529	1.021	56	105.208	0.806	106	139.272	0.596	156	167.252	0.535
13.5	55.550	0.995	57	106.014	0.799	107	139.868	0.594	157	167.787	0.534
14.0	56.545	0.970	58	106.813	0.792	108	140.462	0.592	158	168.321	0.534
14.5	57.515	0.946	59	107.605	0.785	109	141.054	0.590	159	168.855	0.534
15.0	58.461	0.924	60	108.390	0.777	110	141.644	0.588	160	169.389	0.533
15.5	59.385	0.901	61	109.167	0.770	111	142.232	0.586	161	169.922	0.533
16.0	60.286	0.887	62	109.937	0.764	112	142.818	0.584	162	170.455	0.532
16.5	61.173	0.869	63	110.701	0.757	113	143.402	0.582	163	170.987	0.532
17.0	62.042	0.850	64	111.458	0.751	114	143.984	0.581	164	171.519	0.532
17.5	62.892	0.833	65	112.209	0.745	115	144.565	0.579	165	172.051	0.532
18.0	63.725	0.817	66	112.954	0.740	116	145.144	0.577	166	172.583	0.531
18.5	64.542	0.802	67	113.694	0.735	117	145.721	0.576	167	173.114	0.531
19.0	65.344	0.788	68	114.429	0.729	118	146.297	0.574	168	173.645	0.531
19.5	66.132	0.775	69	115.158	0.722	119	146.871	0.572	169	174.176	0.530
20	66.907	1.511	70	115.880	0.717	120	147.443	0.570	170	174.706	0.530
21	68.418	1.464	71	116.597	0.712	121	148.013	0.569	171	175.236	0.530
22	69.882	1.420	72	117.309	0.708	122	148.582	0.568	172	175.766	0.530
23	71.302	1.379	73	118.017	0.703	123	149.150	0.566	173	176.296	0.529
24	72.681	1.342	74	118.720	0.698	124	149.716	0.565	174	176.825	0.529
25	74.023	1.308	75	119.418	0.694	125	150.281	0.563	175	177.354	0.529
26	75.331	1.275	76	120.112	0.689	126	150.844	0.562	176	177.883	0.530
27	76.606	1.245	77	120.801	0.685	127	151.406	0.560	177	178.413	0.529
28	77.851	1.217	78	121.486	0.680	128	151.966	0.559	178	178.942	0.529
29	79.068	1.190	79	122.166	0'676	129	152.525	0.558	179	179.471	0.529
30	80.258		80	122.842		130	153.083		180	180.000	
M	*E*	Δ	*M*	*E*	Δ	*M*	*E*	Δ	*M*	*E*	Δ

$$E = M + e \sin E.$$

$e = 0.90$

M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	4.945	30	80.920	1.153	80	123.166	0.668	130	153.227	0.554
0.5	4.945	4.652	31	82.073	1.131	81	123.834	0.664	131	153.781	0.553
1.0	9.597	4.206	32	83.204	1.108	82	124.498	0.660	132	154.334	0.552
1.5	13.803	3.741	33	84.312	1.088	83	125.158	0.657	133	154.886	0.550
2.0	17.544	3.329	34	85.400	1.068	84	125.815	0.653	134	155.426	0.550
2.5	20.873	2.980	35	86.468	1.050	85	126.468	0.650	135	155.986	0.548
3.0	23.853	2.692	36	87.518	1.032	86	127.118	0.647	136	156.534	0.548
3.5	26.545	2.454	37	88.550	1.015	87	127.765	0.643	137	157.082	0.546
4.0	28.999	2.256	38	89.565	0.999	88	128.408	0.640	138	157.628	0.545
4.5	31.255	2.089	39	90.564	0.984	89	129.048	0.637	139	158.173	0.544
5.0	33.344	1.949	40	91.548	0.969	90	129.685	0.633	140	158.717	0.544
5.5	35.293	1.824	41	92.517	0.955	91	130.318	0.631	141	159.261	0.543
6.0	37.117	1.722	42	93.472	0.941	92	130.949	0.627	142	159.804	0.542
6.5	38.839	1.628	43	94.413	0.929	93	131.576	0.624	143	160.346	0.541
7.0	40.467	1.547	44	95.342	0.917	94	132.200	0.621	144	160.887	0.540
7.5	42.014	1.474	45	96.259	0.905	95	132.821	0.619	145	161.427	0.538
8.0	43.488	1.410	46	97.164	0.893	96	133.440	0.617	146	161.965	0.538
8.5	44.898	1.351	47	98.057	0.883	97	134.057	0.614	147	162.503	0.538
9.0	46.249	1.299	48	98.940	0.872	98	134.671	0.611	148	163.041	0.537
9.5	47.548	1.250	49	99.812	0.863	99	135.282	0.609	149	163.578	0.536
10.0	48.798	1.207	50	100.675	0.853	100	135.891	0.606	150	164.114	0.536
10.5	50.005	1.166	51	101.528	0.842	101	136.497	0.604	151	164.650	0.535
11.0	51.171	1.130	52	102.370	0.833	102	137.101	0.602	152	165.185	0.535
11.5	52.301	1.095	53	103.203	0.825	103	137.703	0.599	153	165.720	0.534
12.0	53.396	1.064	54	104.028	0.817	104	138.302	0.597	154	166.254	0.533
12.5	54.460	1.034	55	104.845	0.809	105	138.899	0.595	155	166.787	0.533
13.0	55.494	1.007	56	105.654	0.800	106	139.494	0.592	156	167.320	0.532
13.5	56.501	0.981	57	106.454	0.793	107	140.086	0.590	157	167.852	0.532
14.0	57.482	0.957	58	107.247	0.786	108	140.676	0.588	158	168.384	0.531
14.5	58.439	0.934	59	108.033	0.779	109	141.264	0.587	159	168.915	0.531
15.0	59.373	0.913	60	108.812	0.771	110	141.851	0.585	160	169.446	0.530
15.5	60.286	0.892	61	109.583	0.765	111	142.436	0.583	161	169.976	0.530
16.0	61.178	0.874	62	110.348	0.759	112	143.019	0.581	162	170.506	0.529
16.5	62.052	0.856	63	111.107	0.752	113	143.600	0.579	163	171.035	0.529
17.0	62.908	0.839	64	111.859	0.745	114	144.179	0.577	164	171.564	0.529
17.5	63.747	0.823	65	112.604	0.741	115	144.756	0.576	165	172.093	0.529
18.0	64.570	0.807	66	113.345	0.734	116	145.332	0.574	166	172.622	0.528
18.5	65.377	0.793	67	114.079	0.729	117	145.906	0.572	167	173.150	0.528
19.0	66.170	0.779	68	114.808	0.723	118	146.478	0.570	168	173.678	0.528
19.5	66.949	0.765	69	115.531	0.718	119	147.048	0.569	169	174.206	0.528
20	67.714	1.494	70	116.249	0.713	120	147.617	0.567	170	174.734	0.527
21	69.208	1.447	71	116.962	0.707	121	148.184	0.566	171	175.261	0.527
22	70.655	1.404	72	117.669	0.703	122	148.750	0.565	172	175.788	0.527
23	72.059	1.364	73	118.372	0.698	123	149.315	0.563	173	176.315	0.527
24	73.423	1.327	74	119.070	0.694	124	149.878	0.562	174	176.842	0.527
25	74.750	1.294	75	119.764	0.689	125	150.440	0.560	175	177.369	0.526
26	76.044	1.262	76	120.453	0.685	126	151.000	0.559	176	177.895	0.526
27	77.306	1.232	77	121.138	0.680	127	151.559	0.557	177	178.421	0.526
28	78.538	1.204	78	121.818	0.676	128	152.116	0.556	178	178.947	0.527
29	79.742	1.178	79	122.494	0.672	129	152.672	0.555	179	179.474	0.526
30	80.920		80	123.166		130	153.227		180	180.000	
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ

$E = M + e \sin E.$

$e = 0.91$

M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	5.471	30	81.577	1.142	80	123.486	0.664	130	153.370	0.551
0.5	5.471	5.044	31	82.719	1.119	81	124.150	0.659	131	153.921	0.550
1.0	10.515	4.443	32	83.838	1.098	82	124.809	0.656	132	154.471	0.549
1.5	14.958	3.861	33	84.936	1.077	83	125.465	0.653	133	155.020	0.547
2.0	18.819	3.383	34	86.013	1.058	84	126.118	0.649	134	155.567	0.546
2.5	22.202	2.997	35	87.071	1.040	85	126.767	0.645	135	156.113	0.546
3.0	25.199	2.688	36	88.111	1.023	86	127.412	0.642	136	156.659	0.544
3.5	27.887	2.439	37	89.134	1.005	87	128.054	0.640	137	157.203	0.543
4.0	30.326	2.236	38	90.139	0.991	88	128.694	0.636	138	157.746	0.542
4.5	32.562	2.065	39	91.130	0.974	89	129.330	0.632	139	158.288	0.541
5.0	34.627	1.923	40	92.104	0.961	90	129.962	0.630	140	158.829	0.541
5.5	36.550	1.802	41	93.065	0.947	91	130.592	0.627	141	159.370	0.540
6.0	38.352	1.696	42	94.012	0.933	92	131.219	0.624	142	159.910	0.539
6.5	40.048	1.604	43	94.945	0.921	93	131.843	0.620	143	160.449	0.538
7.0	41.652	1.523	44	95.866	0.909	94	132.463	0.618	144	160.987	0.537
7.5	43.175	1.453	45	96.775	0.897	95	133.081	0.615	145	161.524	0.536
8.0	44.628	1.388	46	97.672	0.886	96	133.696	0.613	146	162.060	0.535
8.5	46.016	1.331	47	98.558	0.876	97	134.309	0.611	147	162.595	0.535
9.0	47.347	1.279	48	99.434	0.865	98	134.920	0.607	148	163.130	0.534
9.5	48.626	1.232	49	100.299	0.856	99	135.527	0.605	149	163.664	0.534
10.0	49.858	1.188	50	101.155	0.846	100	136.132	0.602	150	164.198	0.533
10.5	51.046	1.149	51	102.001	0.836	101	136.734	0.600	151	164.731	0.532
11.0	52.195	1.113	52	102.837	0.827	102	137.334	0.598	152	165.263	0.532
11.5	53.308	1.080	53	103.664	0.818	103	137.932	0.596	153	165.795	0.531
12.0	54.388	1.049	54	104.482	0.811	104	138.528	0.594	154	166.326	0.530
12.5	55.437	1.020	55	105.293	0.803	105	139.122	0.592	155	166.856	0.530
13.0	56.457	0.992	56	106.096	0.794	106	139.714	0.589	156	167.386	0.530
13.5	57.449	0.967	57	106.890	0.787	107	140.303	0.586	157	167.916	0.529
14.0	58.416	0.944	58	107.677	0.780	108	140.889	0.585	158	168.445	0.528
14.5	59.360	0.922	59	108.457	0.773	109	141.474	0.583	159	168.973	0.528
15.0	60.282	0.900	60	109.230	0.766	110	142.057	0.582	160	169.501	0.528
15.5	61.182	0.881	61	109.996	0.759	111	142.639	0.580	161	170.029	0.527
16.0	62.063	0.862	62	110.755	0.753	112	143.219	0.577	162	170.556	0.527
16.5	62.925	0.845	63	111.508	0.747	113	143.796	0.576	163	171.083	0.526
17.0	63.770	0.828	64	112.255	0.740	114	144.372	0.574	164	171.609	0.526
17.5	64.598	0.813	65	112.995	0.735	115	144.946	0.572	165	172.135	0.526
18.0	65.411	0.797	66	113.730	0.729	116	145.518	0.571	166	172.661	0.525
18.5	66.208	0.783	67	114.459	0.724	117	146.089	0.569	167	173.186	0.525
19.0	66.991	0.769	68	115.183	0.719	118	146.658	0.567	168	173.711	0.525
19.5	67.760	0.757	69	115.902	0.713	119	147.225	0.565	169	174.236	0.525
20	68.517	1.476	70	116.615	0.708	120	147.790	0.564	170	174.761	0.525
21	69.993	1.430	71	117.323	0.702	121	148.354	0.563	171	175.286	0.524
22	71.423	1.388	72	118.025	0.698	122	148.917	0.562	172	175.810	0.524
23	72.811	1.348	73	118.723	0.694	123	149.479	0.560	173	176.334	0.524
24	74.159	1.323	74	119.417	0.689	124	150.039	0.559	174	176.858	0.524
25	75.472	1.279	75	120.106	0.684	125	150.598	0.557	175	177.382	0.524
26	76.751	1.249	76	120.790	0.680	126	151.155	0.556	176	177.906	0.524
27	78.000	1.219	77	121.470	0.676	127	151.711	0.554	177	178.430	0.524
28	79.219	1.192	78	122.146	0.672	128	152.265	0.553	178	178.954	0.523
29	80.411	1.166	79	122.818	0.668	129	152.818	0.552	179	179.477	0.523
30	81.577		80	123.486		130	153.370		180	180.000	
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ

$E = M + e \sin E.$

$e = 0.92$											
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	6.116	30	82.228	1.130	80	123.802	0.659	130	153.511	0.548
0.5	6.116	5.476	31	83.358	1.108	81	124.461	0.656	131	154.059	0.547
1.0	11.592	4.661	32	84.466	1.087	82	125.117	0.652	132	154.606	0.545
1.5	16.253	3.957	33	85.553	1.067	83	125.769	0.649	133	155.151	0.545
2.0	20.210	3.411	34	86.620	1.049	84	126.418	0.645	134	155.696	0.543
2.5	23.621	2.992	35	87.669	1.030	85	127.063	0.642	135	156.239	0.542
3.0	26.613	2.679	36	88.699	1.012	86	127.705	0.638	136	156.781	0.542
3.5	29.282	2.412	37	89.711	0.997	87	128.343	0.635	137	157.323	0.540
4.0	31.694	2.206	38	90.708	0.981	88	128.978	0.632	138	157.863	0.539
4.5	33.900	2.035	39	91.689	0.966	89	129.610	0.629	139	158.402	0.539
5.0	35.935	1.893	40	92.655	0.953	90	130.239	0.625	140	158.941	0.538
5.5	37.828	1.772	41	93.608	0.938	91	130.864	0.623	141	159.479	0.536
6.0	39.600	1.668	42	94.546	0.926	92	131.487	0.620	142	160.015	0.536
6.5	41.268	1.578	43	95.472	0.913	93	132.107	0.617	143	160.551	0.535
7.0	42.846	1.498	44	96.385	0.901	94	132.724	0.614	144	161.086	0.535
7.5	44.344	1.428	45	97.286	0.890	95	133.338	0.612	145	161.621	0.533
8.0	45.772	1.365	46	98.176	0.879	96	133.950	0.609	146	162.154	0.533
8.5	47.137	1.309	47	99.055	0.868	97	134.559	0.606	147	162.687	0.532
9.0	48.446	1.259	48	99.923	0.859	98	135.165	0.604	148	163.219	0.531
9.5	49.705	1.212	49	100.782	0.848	99	135.769	0.602	149	163.750	0.531
10.0	50.917	1.170	50	101.630	0.839	100	136.371	0.599	150	164.281	0.530
10.5	52.087	1.131	51	102.469	0.830	101	136.970	0.597	151	164.811	0.529
11.0	53.218	1.096	52	103.299	0.821	102	137.567	0.594	152	165.340	0.529
11.5	54.314	1.063	53	104.120	0.812	103	138.161	0.592	153	165.869	0.528
12.0	55.377	1.033	54	104.932	0.804	104	138.753	0.590	154	166.397	0.528
12.5	56.410	1.005	55	105.736	0.797	105	139.343	0.588	155	166.925	0.527
13.0	57.415	0.978	56	106.533	0.789	106	139.931	0.586	156	167.452	0.527
13.5	58.393	0.954	57	107.322	0.781	107	140.517	0.584	157	167.979	0.526
14.0	59.347	0.930	58	108.103	0.774	108	141.101	0.582	158	168.505	0.526
14.5	60.277	0.909	59	108.877	0.767	109	141.683	0.580	159	169.031	0.525
15.0	61.186	0.888	60	109.644	0.761	110	142.263	0.578	160	169.556	0.525
15.5	62.074	0.869	61	110.405	0.754	111	142.841	0.575	161	170.081	0.524
16.0	62.943	0.851	62	111.159	0.747	112	143.416	0.574	162	170.605	0.524
16.5	63.794	0.834	63	111.906	0.741	113	143.990	0.573	163	171.129	0.524
17.0	64.628	0.817	64	112.647	0.736	114	144.563	0.571	164	171.653	0.523
17.5	65.445	0.802	65	113.383	0.730	115	145.134	0.569	165	172.176	0.523
18.0	66.247	0.787	66	114.113	0.724	116	145.703	0.567	166	172.699	0.523
18.5	67.034	0.773	67	114.837	0.718	117	146.270	0.566	167	173.222	0.522
19.0	67.807	0.760	68	115.555	0.714	118	146.836	0.564	168	173.744	0.522
19.5	68.567	0.747	69	116.269	0.708	119	147.400	0.562	169	174.266	0.522
20	69.314	1.458	70	116.977	0.703	120	147.962	0.561	170	174.788	0.522
21	70.772	1.412	71	117.680	0.698	121	148.523	0.560	171	175.310	0.522
22	72.184	1.372	72	118.378	0.693	122	149.083	0.558	172	175.832	0.521
23	73.556	1.334	73	119.071	0.689	123	149.641	0.557	173	176.353	0.521
24	74.890	1.298	74	119.760	0.684	124	150.198	0.555	174	176.874	0.521
25	76.188	1.265	75	120.444	0.680	125	150.753	0.554	175	177.395	0.521
26	77.453	1.235	76	121.124	0.676	126	151.307	0.553	176	177.916	0.521
27	78.688	1.206	77	121.800	0.671	127	151.860	0.552	177	178.437	0.521
28	79.894	1.180	78	122.471	0.667	128	152.412	0.550	178	178.958	0.521
29	81.074	1.154	79	123.138	0.664	129	152.962	0.549	179	179.479	0.521
30	82.228		80	123.802		130	153.511		180	180.000	
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ

$$E = M + e \sin E.$$

$e = 0.93$

M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	6.920	30	82.873	1.120	80	124.116	0.655	130	153.651	0.545
0.5	6.920	5.936	31	83.993	1.097	81	124.771	0.651	131	154.196	0.544
1.0	12.856	4.854	32	85.090	1.076	82	125.422	0.648	132	154.740	0.543
1.5	17.710	4.005	33	86.166	1.056	83	126.070	0.644	133	155.283	0.541
2.0	21.715	3.407	34	87.222	1.037	84	126.714	0.641	134	155.824	0.540
2.5	25.122	2.967	35	88.260	1.021	85	127.355	0.638	135	156.364	0.540
3.0	28.089	2.633	36	89.281	1.004	86	127.993	0.634	136	156.904	0.538
3.5	30.722	2.374	37	90.285	0.987	87	128.627	0.631	137	157.442	0.537
4.0	33.096	2.167	38	91.272	0.973	88	129.258	0.628	138	157.979	0.536
4.5	35.263	1.999	39	92.245	0.957	89	129.886	0.625	139	158.515	0.536
5.0	37.262	1.858	40	93.202	0.944	90	130.511	0.622	140	159.051	0.534
5.5	39.120	1.739	41	94.146	0.930	91	131.133	0.619	141	159.585	0.534
6.0	40.859	1.637	42	95.076	0.918	92	131.752	0.616	142	160.119	0.533
6.5	42.496	1.549	43	95.994	0.906	93	132.368	0.614	143	160.652	0.533
7.0	44.045	1.471	44	96.900	0.894	94	132.982	0.610	144	161.185	0.531
7.5	45.516	1.403	45	97.794	0.881	95	133.592	0.608	145	161.716	0.531
8.0	46.919	1.341	46	98.675	0.872	96	134.200	0.606	146	162.247	0.530
8.5	48.260	1.286	47	99.547	0.861	97	134.806	0.603	147	162.777	0.529
9.0	49.546	1.237	48	100.408	0.851	98	135.409	0.600	148	163.306	0.529
9.5	50.783	1.192	49	101.259	0.842	99	136.009	0.597	149	163.835	0.528
10.0	51.975	1.151	50	102.101	0.832	100	136.606	0.595	150	164.363	0.527
10.5	53.126	1.113	51	102.933	0.824	101	137.201	0.593	151	164.890	0.526
11.0	54.239	1.079	52	103.757	0.815	102	137.794	0.592	152	165.416	0.526
11.5	55.318	1.046	53	104.572	0.806	103	138.386	0.589	153	165.942	0.526
12.0	56.364	1.017	54	105.378	0.798	104	138.975	0.587	154	166.468	0.525
12.5	57.381	0.989	55	106.176	0.790	105	139.562	0.585	155	166.993	0.524
13.0	58.370	0.963	56	106.966	0.783	106	140.147	0.583	156	167.517	0.524
13.5	59.333	0.939	57	107.749	0.776	107	140.730	0.580	157	168.041	0.523
14.0	60.272	0.917	58	108.525	0.768	108	141.310	0.578	158	168.564	0.523
14.5	61.189	0.896	59	109.293	0.761	109	141.888	0.576	159	169.087	0.523
15.0	62.085	0.876	60	110.054	0.755	110	142.464	0.575	160	169.610	0.522
15.5	62.961	0.857	61	110.809	0.749	111	143.039	0.573	161	170.132	0.522
16.0	63.818	0.839	62	111.558	0.742	112	143.612	0.571	162	170.654	0.521
16.5	64.657	0.822	63	112.300	0.737	113	144.183	0.569	163	171.175	0.521
17.0	65.479	0.807	64	113.037	0.730	114	144.752	0.567	164	171.696	0.521
17.5	66.286	0.791	65	113.767	0.724	115	145.319	0.566	165	172.217	0.520
18.0	67.077	0.777	66	114.491	0.719	116	145.885	0.564	166	172.737	0.520
18.5	67.854	0.763	67	115.210	0.713	117	146.449	0.562	167	173.257	0.520
19.0	68.617	0.750	68	115.923	0.708	118	147.011	0.561	168	173.777	0.520
19.5	69.367	0.738	69	116.631	0.704	119	147.572	0.560	169	174.297	0.519
20	70.105	1.440	70	117.335	0.698	120	148.132	0.558	170	174.816	0.519
21	71.545	1.396	71	118.033	0.694	121	148.690	0.557	171	175.335	0.519
22	72.941	1.356	72	118.727	0.689	122	149.247	0.555	172	175.854	0.519
23	74.297	1.317	73	119.416	0.684	123	149.802	0.554	173	176.373	0.519
24	75.614	1.284	74	120.100	0.679	124	150.356	0.552	174	176.892	0.518
25	76.898	1.251	75	120.779	0.675	125	150.908	0.551	175	177.410	0.518
26	78.149	1.222	76	121.454	0.671	126	151.459	0.550	176	177.928	0.518
27	79.371	1.193	77	122.125	0.668	127	152.009	0.549	177	178.446	0.518
28	80.564	1.167	78	122.793	0.663	128	152.558	0.547	178	178.964	0.518
29	81.731	1.142	79	123.456	0.660	129	153.105	0.546	179	179.482	0.518
30	82.873		80	124.116		130	153.651		180	180.000	
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ

$$E = M + e \sin E.$$

$e = 0.94$											
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	7.937	30	83.513	1.108	80	124.426	0.651	130	153.789	0.542
0.5	7.937	6.395	31	84.621	1.086	81	125.077	0.647	131	154.331	0.541
1.0	14.332	4.986	32	85.707	1.066	82	125.724	0.644	132	154.872	0.540
1.5	19.318	4.006	33	86.773	1.046	83	126.368	0.640	133	155.412	0.538
2.0	23.324	3.373	34	87.819	1.028	84	127.008	0.637	134	155.950	0.538
2.5	26.697	2.917	35	88.847	1.011	85	127.645	0.634	135	156.488	0.536
3.0	29.614	2.584	36	89.858	0.994	86	128.279	0.631	136	157.024	0.536
3.5	32.198	2.327	37	90.852	0.979	87	128.910	0.627	137	157.560	0.534
4.0	34.525	2.122	38	91.831	0.963	88	129.537	0.624	138	158.094	0.534
4.5	36.647	1.957	39	92.794	0.949	89	130.161	0.621	139	158.628	0.532
5.0	38.604	1.819	40	93.743	0.935	90	130.782	0.618	140	159.160	0.532
5.5	40.423	1.703	41	94.678	0.923	91	131.400	0.615	141	159.692	0.531
6.0	42.126	1.604	42	95.601	0.910	92	132.015	0.612	142	160.223	0.530
6.5	43.730	1.518	43	96.511	0.898	93	132.627	0.610	143	160.753	0.529
7.0	45.248	1.442	44	97.409	0.886	94	133.237	0.607	144	161.282	0.529
7.5	46.690	1.376	45	98.295	0.875	95	133.844	0.604	145	161.811	0.528
8.0	48.066	1.316	46	99.170	0.864	96	134.448	0.602	146	162.339	0.527
8.5	49.382	1.262	47	100.034	0.854	97	135.050	0.599	147	162.866	0.527
9.0	50.644	1.215	48	100.888	0.845	98	135.649	0.597	148	163.393	0.526
9.5	51.859	1.171	49	101.733	0.835	99	136.246	0.594	149	163.919	0.525
10.0	53.030	1.132	50	102.568	0.825	100	136.840	0.592	150	164.444	0.524
10.5	54.162	1.095	51	103.393	0.817	101	137.432	0.590	151	164.968	0.524
11.0	55.257	1.060	52	104.210	0.809	102	138.022	0.588	152	165.492	0.523
11.5	56.317	1.028	53	105.019	0.800	103	138.610	0.586	153	166.015	0.523
12.0	57.345	1.001	54	105.819	0.792	104	139.196	0.583	154	166.538	0.522
12.5	58.346	0.974	55	106.611	0.784	105	139.779	0.581	155	167.060	0.522
13.0	59.320	0.948	56	107.395	0.777	106	140.360	0.579	156	167.582	0.521
13.5	60.268	0.925	57	108.172	0.770	107	140.939	0.577	157	168.103	0.520
14.0	61.193	0.903	58	108.942	0.762	108	141.516	0.575	158	168.623	0.520
14.5	62.096	0.883	59	109.704	0.756	109	142.091	0.573	159	169.143	0.520
15.0	62.979	0.863	60	110.460	0.750	110	142.664	0.571	160	169.663	0.520
15.5	63.842	0.845	61	111.210	0.743	111	143.235	0.570	161	170.183	0.519
16.0	64.687	0.827	62	111.953	0.737	112	143.805	0.568	162	170.702	0.519
16.5	65.514	0.811	63	112.690	0.730	113	144.373	0.566	163	171.221	0.518
17.0	66.325	0.796	64	113.420	0.725	114	144.939	0.564	164	171.739	0.518
17.5	67.121	0.781	65	114.145	0.720	115	145.503	0.563	165	172.257	0.518
18.0	67.902	0.767	66	114.865	0.714	116	146.066	0.561	166	172.775	0.517
18.5	68.669	0.753	67	115.579	0.709	117	146.627	0.559	167	173.292	0.517
19.0	69.422	0.740	68	116.288	0.704	118	147.186	0.558	168	173.809	0.517
19.5	70.162	0.728	69	116.992	0.698	119	147.744	0.556	169	174.326	0.517
20	70.890	1.418	70	117.690	0.693	120	148.300	0.555	170	174.843	0.516
21	72.308	1.383	71	118.383	0.689	121	148.855	0.554	171	175.359	0.516
22	73.691	1.339	72	119.072	0.684	122	149.409	0.552	172	175.875	0.516
23	75.030	1.303	73	119.756	0.680	123	149.961	0.551	173	176.391	0.516
24	76.333	1.269	74	120.436	0.675	124	150.512	0.549	174	176.907	0.516
25	77.602	1.238	75	121.111	0.671	125	151.061	0.548	175	177.423	0.516
26	78.840	1.208	76	121.782	0.667	126	151.609	0.547	176	177.939	0.515
27	80.048	1.180	77	122.449	0.663	127	152.156	0.546	177	178.454	0.515
28	81.228	1.155	78	123.112	0.659	128	152.702	0.544	178	178.969	0.516
29	82.383	1.130	79	123.771	0.655	129	153.246	0.543	179	179.485	0.515
30	83.513		80	124.426		130	153.789		180	180 000	
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ

$$E = M + e \sin E.$$

$e = 0.95$

M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	9.240	30	84.147	1.096	80	124.733	0.647	130	153.925	0.539
0.5	9.240	6.797	31	85.243	1.075	81	125.380	0.643	131	154.464	0.538
1.0	16.037	5.018	32	86.318	1.056	82	126.023	0.640	132	155.002	0.537
1.5	21.055	3.970	33	87.374	1.036	83	126.663	0.636	133	155.539	0.535
2.0	25.025	3.304	34	88.410	1.019	84	127.299	0.633	134	156.074	0.535
2.5	28.329	2.853	35	89.429	1.001	85	127.932	0.630	135	156.609	0.534
3.0	31.182	2.522	36	90.430	0.984	86	128.562	0.626	136	157.143	0.533
3.5	33.704	2.269	37	91.414	0.970	87	129.188	0.623	137	157.676	0.531
4.0	35.973	2.071	38	92.384	0.955	88	129.811	0.620	138	158.207	0.531
4.5	38.044	1.911	39	93.339	0.940	89	130.431	0.618	139	158.738	0.530
5.0	39.955	1.777	40	94.279	0.927	90	131.049	0.615	140	159.268	0.529
5.5	41.732	1.665	41	95.206	0.915	91	131.664	0.611	141	159.797	0.529
6.0	43.397	1.568	42	96.121	0.902	92	132.275	0.609	142	160.326	0.528
6.5	44.965	1.486	43	97.023	0.890	93	132.884	0.606	143	160.854	0.527
7.0	46.451	1.412	44	97.913	0.878	94	133.490	0.603	144	161.381	0.525
7.5	47.863	1.350	45	98.791	0.868	95	134.093	0.601	145	161.906	0.525
8.0	49.213	1.290	46	99.659	0.858	96	134.694	0.598	146	162.431	0.524
8.5	50.503	1.237	47	100.517	0.847	97	135.292	0.596	147	162.955	0.524
9.0	51.740	1.192	48	101.364	0.837	98	135.888	0.593	148	163.479	0.523
9.5	52.932	1.149	49	102.201	0.828	99	136.481	0.591	149	164.002	0.522
10.0	54.081	1.111	50	103.029	0.820	100	137.072	0.589	150	164.524	0.522
10.5	55.192	1.075	51	103.849	0.810	101	137.661	0.586	151	165.046	0.521
11.0	56.267	1.042	52	104.659	0.802	102	138.247	0.584	152	165.567	0.520
11.5	57.309	1.012	53	105.461	0.794	103	138.831	0.582	153	166.087	0.520
12.0	58.321	0.984	54	106.255	0.786	104	139.413	0.580	154	166.607	0.520
12.5	59.305	0.958	55	107.041	0.779	105	139.993	0.578	155	167.127	0.519
13.0	60.263	0.934	56	107.820	0.771	106	140.571	0.576	156	167.646	0.518
13.5	61.197	0.911	57	108.591	0.764	107	141.147	0.574	157	168.164	0.518
14.0	62.108	0.889	58	109.355	0.757	108	141.721	0.572	158	168.682	0.518
14.5	62.997	0.870	59	110.112	0.750	109	142.293	0.569	159	169.200	0.517
15.0	63.867	0.850	60	110.862	0.744	110	142.862	0.568	160	169.717	0.517
15.5	64.717	0.833	61	111.606	0.738	111	143.430	0.566	161	170.234	0.516
16.0	65.550	0.815	62	112.344	0.732	112	143.996	0.565	162	170.750	0.516
16.5	66.365	0.800	63	113.076	0.726	113	144.561	0.563	163	171.266	0.515
17.0	67.165	0.785	64	113.802	0.720	114	145.124	0.561	164	171.781	0.515
17.5	67.950	0.770	65	114.522	0.714	115	145.685	0.560	165	172.296	0.515
18.0	68.720	0.757	66	115.236	0.709	116	146.245	0.558	166	172.811	0.515
18.5	69.477	0.743	67	115.945	0.703	117	146.803	0.556	167	173.326	0.514
19.0	70.220	0.730	68	116.648	0.699	118	147.359	0.555	168	173.840	0.514
19.5	70.950	0.719	69	117.347	0.694	119	147.914	0.553	169	174.354	0.514
20	71.669	1.404	70	118.041	0.689	120	148.467	0.552	170	174.868	0.514
21	73.073	1.362	71	118.730	0.684	121	149.019	0.550	171	175.382	0.514
22	74.435	1.323	72	119.414	0.680	122	149.569	0.549	172	175.806	0.513
23	75.758	1.288	73	120.094	0.675	123	150.118	0.548	173	176.409	0.513
24	77.046	1.255	74	120.769	0.670	124	150.666	0.546	174	176.922	0.513
25	78.301	1.223	75	121.439	0.666	125	151.212	0.545	175	177.435	0.513
26	79.524	1.194	76	122.105	0.663	126	151.757	0.544	176	177.948	0.513
27	80.718	1.168	77	122.768	0.659	127	152.301	0.543	177	178.461	0.513
28	81.886	1.142	78	123.427	0.655	128	152.844	0.541	178	178.974	0.513
29	83.028	1.119	79	124.082	0.651	129	153.385	0.540	179	179.487	0.513
30	84.147		80	124.733		130	153.925		180	180.000	
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ

$E = M + e \sin E.$

$e = 0.96$											
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	10.918	30	84.776	1.085	80	125.036	0.643	130	154.060	0.536
0.5	10.918	7.050	31	85.861	1.064	81	125.679	0.639	131	154.596	0.535
1.0	17.968	4.961	32	86.925	1.044	82	126.318	0.636	132	155.131	0.534
1.5	22.929	3.871	33	87.969	1.026	83	126.954	0.633	133	155.665	0.533
2.0	26.800	3.211	34	88.995	1.009	84	127.587	0.629	134	156.198	0.532
2.5	30.011	2.768	35	90.004	0.992	85	128.216	0.626	135	156.730	0.531
3.0	32.779	2.449	36	90.996	0.976	86	128.842	0.623	136	157.261	0.530
3.5	35.228	2.206	37	91.972	0.960	87	129.465	0.619	137	157.791	0.529
4.0	37.434	2.015	38	92.932	0.946	88	130.084	0.616	138	158.320	0.528
4.5	39.449	1.861	39	93.878	0.932	89	130.700	0.614	139	158.848	0.527
5.0	41.310	1.729	40	94.810	0.919	90	131.314	0.611	140	159.375	0.527
5.5	43.039	1.628	41	95.729	0.906	91	131.925	0.607	141	159.902	0.525
6.0	44.667	1.532	42	96.635	0.895	92	132.532	0.605	142	160.427	0.524
6.5	46.199	1.452	43	97.530	0.882	93	133.137	0.603	143	160.951	0.524
7.0	47.651	1.385	44	98.412	0.871	94	133.740	0.600	144	161.475	0.523
7.5	49.036	1.316	45	99.283	0.861	95	134.340	0.597	145	161.998	0.523
8.0	50.352	1.264	46	100.144	0.851	96	134.937	0.595	146	162.521	0.521
8.5	51.616	1.214	47	100.995	0.840	97	135.532	0.592	147	163.042	0.520
9.0	52.830	1.169	48	101.835	0.830	98	136.124	0.590	148	163.563	0.520
9.5	53.999	1.127	49	102.665	0.821	99	136.714	0.587	149	164.083	0.520
10.0	55.126	1.090	50	103.487	0.813	100	137.301	0.585	150	164.603	0.519
10.5	56.216	1.056	51	104.300	0.804	101	137.886	0.583	151	165.122	0.519
11.0	57.272	1.025	52	105.104	0.796	102	138.469	0.581	152	165.641	0.518
11.5	58.297	0.995	53	105.900	0.787	103	139.050	0.578	153	166.159	0.517
12.0	59.292	0.968	54	106.687	0.780	104	139.628	0.576	154	166.676	0.517
12.5	60.260	0.943	55	107.467	0.773	105	140.204	0.574	155	167.193	0.516
13.0	61.203	0.918	56	108.240	0.766	106	140.778	0.573	156	167.709	0.516
13.5	62.121	0.895	57	109.006	0.758	107	141.351	0.571	157	168.225	0.515
14.0	63.016	0.876	58	109.764	0.751	108	141.922	0.569	158	168.740	0.515
14.5	63.892	0.856	59	110.515	0.745	109	142.491	0.567	159	169.255	0.515
15.0	64.748	0.838	60	111.260	0.739	110	143.058	0.565	160	169.770	0.514
15.5	65.586	0.820	61	111.999	0.732	111	143.623	0.563	161	170.284	0.514
16.0	66.406	0.804	62	112.731	0.727	112	144.186	0.561	162	170.798	0.513
16.5	67.210	0.788	63	113.458	0.721	113	144.747	0.560	163	171.311	0.513
17.0	67.998	0.774	64	114.179	0.715	114	145.307	0.558	164	171.824	0.512
17.5	68.772	0.759	65	114.894	0.709	115	145.865	0.557	165	172.336	0.512
18.0	69.531	0.746	66	115.603	0.704	116	146.422	0.555	166	172.848	0.512
18.5	70.277	0.734	67	116.307	0.699	117	146.977	0.553	167	173.360	0.512
19.0	71.011	0.721	68	117.006	0.694	118	147.530	0.552	168	173.872	0.511
19.5	71.732	0.709	69	117.700	0.689	119	148.082	0.550	169	174.383	0.511
20	72.441	1.386	70	118.389	0.684	120	148.632	0.549	170	174.894	0.511
21	73.827	1.345	71	119.073	0.680	121	149.181	0.547	171	175.405	0.511
22	75.172	1.308	72	119.753	0.675	122	149.728	0.546	172	175.916	0.511
23	76.480	1.272	73	120.428	0.671	123	150.274	0.545	173	176.427	0.511
24	77.752	1.240	74	121.099	0.666	124	150.819	0.543	174	176.938	0.511
25	78.992	1.210	75	121.765	0.662	125	151.362	0.542	175	177.449	0.510
26	80.202	1.181	76	122.427	0.658	126	151.904	0.541	176	177.959	0.511
27	81.383	1.155	77	123.085	0.655	127	152.445	0.539	177	178.470	0.510
28	82.538	1.130	78	123.740	0.650	128	152.984	0.538	178	178.980	0.510
29	83.668	1.108	79	124.390	0.646	129	153.522	0.538	179	179.490	0.510
30	84.776		80	125.036		130	154.060		180	180.000	
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ

$$E = M + e \sin E.$$

$e = 0.97$

M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	13.039	30	85.398	1.074	80	125.337	0.639	130	154.194	0.533
0.5	13.039	7.056	31	86.472	1.053	81	125.976	0.635	131	154.727	0.532
1.0	20.095	4.804	32	87.525	1.034	82	126.611	0.632	132	155.259	0.531
1.5	24.899	3.730	33	88.559	1.016	83	127.243	0.629	133	155.790	0.530
2.0	28.629	3.095	34	89.575	0.999	84	127.872	0.625	134	156.320	0.529
2.5	31.724	2.672	35	90.574	0.983	85	128.497	0.622	135	156.849	0.529
3.0	34.396	2.368	36	91.557	0.966	86	129.119	0.618	136	157.378	0.527
3.5	36.764	2.137	37	92.523	0.952	87	129.737	0.616	137	157.905	0.526
4.0	38.901	1.956	38	93.475	0.937	88	130.353	0.613	138	158.431	0.525
4.5	40.857	1.808	39	94.412	0.924	89	130.966	0.610	139	158.956	0.525
5.0	42.665	1.687	40	95.336	0.911	90	131.576	0.607	140	159.481	0.524
5.5	44.352	1.583	41	96.247	0.898	91	132.183	0.604	141	160.005	0.522
6.0	45.935	1.494	42	97.145	0.886	92	132.787	0.601	142	160.527	0.522
6.5	47.429	1.418	43	98.031	0.875	93	133.388	0.599	143	161.049	0.521
7.0	48.847	1.350	44	98.906	0.864	94	133.987	0.596	144	161.570	0.520
7.5	50.197	1.283	45	99.770	0.854	95	134.583	0.594	145	162.090	0.520
8.0	51.480	1.240	46	100.624	0.844	96	135.177	0.591	146	162.610	0.519
8.5	52.720	1.193	47	101.468	0.833	97	135.768	0.589	147	163.129	0.518
9.0	53.913	1.147	48	102.301	0.824	98	136.357	0.587	148	163.647	0.517
9.5	55.060	1.106	49	103.125	0.815	99	136.944	0.584	149	164.164	0.517
10.0	56.166	1.069	50	103.940	0.806	100	137.528	0.582	150	164.681	0.517
10.5	57.235	1.035	51	104.746	0.798	101	138.010	0.580	151	165.198	0.516
11.0	58.270	1.006	52	105.544	0.790	102	138.690	0.577	152	165.714	0.515
11.5	59.276	0.977	53	106.334	0.782	103	139.267	0.575	153	166.229	0.515
12.0	60.253	0.951	54	107.116	0.774	104	139.842	0.573	154	166.744	0.514
12.5	61.204	0.927	55	107.890	0.767	105	140.415	0.571	155	167.258	0.514
13.0	62.131	0.904	56	108.657	0.760	106	140.986	0.569	156	167.772	0.513
13.5	63.035	0.882	57	109.417	0.752	107	141.555	0.568	157	168.285	0.513
14.0	63.917	0.862	58	110.169	0.745	108	142.123	0.566	158	168.798	0.512
14.5	64.779	0.843	59	110.914	0.739	109	142.689	0.563	159	169.310	0.512
15.0	65.622	0.825	60	111.653	0.734	110	143.252	0.562	160	169.822	0.512
15.5	66.447	0.808	61	112.387	0.728	111	143.814	0.560	161	170.334	0.512
16.0	67.255	0.792	62	113.115	0.721	112	144.374	0.558	162	170.846	0.511
16.5	68.047	0.777	63	113.836	0.716	113	144.932	0.556	163	171.357	0.510
17.0	68.824	0.763	64	114.552	0.710	114	145.488	0.555	164	171.867	0.510
17.5	69.587	0.749	65	115.262	0.704	115	146.043	0.553	165	172.377	0.509
18.0	70.336	0.736	66	115.966	0.700	116	146.596	0.551	166	172.886	0.509
18.5	71.072	0.723	67	116.666	0.694	117	147.147	0.550	167	173.395	0.509
19.0	71.795	0.712	68	117.360	0.689	118	147.697	0.548	168	173.904	0.508
19.5	72.507	0.700	69	118.049	0.684	119	148.245	0.548	169	174.412	0.508
20	73.207	1.367	70	118.733	0.679	120	148.793	0.547	170	174.920	0.509
21	74.574	1.328	71	119.412	0.675	121	149.340	0.545	171	175.429	0.508
22	75.902	1.292	72	120.087	0.671	122	149.885	0.543	172	175.937	0.508
23	77.194	1.258	73	120.758	0.666	123	150.428	0.542	173	176.445	0.509
24	78.452	1.225	74	121.424	0.662	124	150.970	0.540	174	176.954	0.508
25	79.677	1.196	75	122.086	0.659	125	151.510	0.539	175	177.462	0.508
26	80.873	1.168	76	122.745	0.654	126	152.049	0.538	176	177.970	0.508
27	82.041	1.143	77	123.399	0.650	127	152.587	0.537	177	178.478	0.508
28	83.184	1.119	78	124.049	0.646	128	153.124	0.535	178	178.986	0.507
29	84.303	1.095	79	124.695	0.642	129	153.659	0.535	179	179.493	0.507
30	85.398		80	125.337		130	154.194		180	180.000	
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ

$E = M + e \sin E.$

$e = 0.98$											
M	*E*	*Δ*	*M*	*E*	*Δ*	*M*	*E*	*Δ*	*M*	*E*	*Δ*
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	15.596	30	86.014	1.063	80	125.635	0.635	130	154.327	0.531
0.5	15.596	6.773	31	87.077	1.043	81	126.270	0.631	131	154.858	0.529
1.0	22.369	4.564	32	88.120	1.024	82	126.901	0.628	132	155.387	0.528
1.5	26.933	3.556	33	89.144	1.006	83	127.529	0.625	133	155.915	0.527
2.0	30.489	2.963	34	90.150	0.989	84	128.154	0.621	134	156.442	0.526
2.5	33.452	2.568	35	91.139	0.973	85	128.775	0.618	135	156.968	0.525
3.0	36.020	2.283	36	92.112	0.957	86	129.393	0.615	136	157.493	0.524
3.5	38.303	2.065	37	93.069	0.943	87	130.008	0.612	137	158.017	0.524
4.0	40.368	1.854	38	94.012	0.929	88	130.620	0.609	138	158.541	0.523
4.5	42.262	1.755	39	94.941	0.916	89	131.229	0.606	139	159.064	0.522
5.0	44.017	1.639	40	95.857	0.903	90	131.835	0.603	140	159.586	0.521
5.5	45.656	1.541	41	96.760	0.890	91	132.438	0.601	141	160.107	0.520
6.0	47.197	1.456	42	97.650	0.879	92	133.039	0.598	142	160.627	0.519
6.5	48.653	1.383	43	98.529	0.868	93	133.637	0.595	143	161.146	0.519
7.0	50.036	1.319	44	99.397	0.857	94	134.232	0.593	144	161.665	0.517
7.5	51.355	1.261	45	100.254	0.846	95	134.825	0.590	145	162.182	0.517
8.0	52.616	1.210	46	101.100	0.836	96	135.415	0.588	146	162.699	0.516
8.5	53.826	1.164	47	101.936	0.827	97	136.003	0.585	147	163.215	0.515
9.0	54.990	1.122	48	102.763	0.817	98	136.588	0.583	148	163.730	0.515
9.5	56.112	1.083	49	103.580	0.809	99	137.171	0.581	149	164.245	0.514
10.0	57.195	1.049	50	104.389	0.800	100	137.752	0.579	150	164.759	0.514
10.5	58.244	1.017	51	105.189	0.791	101	138.331	0.576	151	165.273	0.513
11.0	59.261	0.988	52	105.980	0.784	102	138.907	0.574	152	165.786	0.512
11.5	60.249	0.960	53	106.764	0.776	103	139.481	0.572	153	166.298	0.512
12.0	61.209	0.934	54	107.540	0.768	104	140.053	0.570	154	166.810	0.511
12.5	62.143	0.911	55	108.308	0.760	105	140.623	0.568	155	167.321	0.511
13.0	63.054	0.888	56	109.068	0.754	106	141.191	0.566	156	167.832	0.511
13.5	63.942	0.868	57	109.822	0.748	107	141.757	0.564	157	168.343	0.510
14.0	64.810	0.848	58	110.570	0.741	108	142.321	0.562	158	168.853	0.510
14.5	65.658	0.830	59	111.311	0.734	109	142.883	0.560	159	169.363	0.509
15.0	66.488	0.813	60	112.045	0.728	110	143.443	0.559	160	169.872	0.509
15.5	67.301	0.796	61	112.773	0.722	111	144.002	0.557	161	170.381	0.508
16.0	68.097	0.780	62	113.495	0.716	112	144.559	0.555	162	170.889	0.508
16.5	68.877	0.766	63	114.211	0.711	113	145.114	0.554	163	171.397	0.508
17.0	69.643	0.752	64	114.922	0.705	114	145.668	0.552	164	171.905	0.508
17.5	70.395	0.738	65	115.627	0.699	115	146.220	0.550	165	172.413	0.507
18.0	71.133	0.726	66	116.326	0.695	116	146.770	0.549	166	172.920	0.507
18.5	71.859	0.714	67	117.021	0.689	117	147.319	0.547	167	173.427	0.507
19.0	72.573	0.702	68	117.710	0.684	118	147.866	0.546	168	173.934	0.506
19.5	73.275	0.691	69	118.394	0.681	119	148.412	0.544	169	174.440	0.506
20	73.966	1.351	70	119.075	0.675	120	148.956	0.543	170	174.946	0.506
21	75.317	1.311	71	119.750	0.670	121	149.499	0.542	171	175.452	0.506
22	76.628	1.275	72	120.420	0.666	122	150.041	0.540	172	175.958	0.506
23	77.903	1.242	73	121.086	0.662	123	150.581	0.539	173	176.464	0.505
24	79.145	1.211	74	121.748	0.658	124	151.120	0.538	174	176.969	0.506
25	80.356	1.183	75	122.406	0.654	125	151.658	0.536	175	177.475	0.505
26	81.539	1.155	76	123.060	0.649	126	152.194	0.535	176	177.980	0.505
27	82.694	1.130	77	123.709	0.646	127	152.729	0.534	177	178.485	0.505
28	83.824	1.106	78	124.355	0.642	128	153.263	0.533	178	178.990	0.505
29	84.930	1.084	79	124.997	0.638	129	153.796	0.531	179	179.495	0.505
30	86.014		80	125.635		130	154.327		180	180.000	
M	*E*	*Δ*	*M*	*E*	*Δ*	*M*	*E*	*Δ*	*M*	*E*	*Δ*

$E = M + e \sin E.$

$e = 0.99$											
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	18.474	30	86.624	1.052	80	125.930	0.631	130	154.458	0.527
0.5	18.474	6.252	31	87.676	1.032	81	126.561	0.627	131	154.985	0.526
1.0	24.726	4.272	32	88.708	1.014	82	127.188	0.624	132	155.511	0.526
1.5	28.998	3.363	33	89.722	0.996	83	127.812	0.621	133	156.037	0.525
2.0	32.361	2.823	34	90.718	0.980	84	128.433	0.618	134	156.562	0.524
2.5	35.184	2.458	35	91.698	0.964	85	129.051	0.614	135	157.086	0.522
3.0	37.642	2.195	36	92.662	0.948	86	129.665	0.611	136	157.608	0.522
3.5	39.837	1.992	37	93.610	0.934	87	130.276	0.608	137	158.130	0.520
4.0	41.829	1.831	38	94.544	0.921	88	130.884	0.606	138	158.650	0.520
4.5	43.660	1.701	39	95.465	0.907	89	131.490	0.602	139	159.170	0.519
5.0	45.361	1.591	40	96.372	0.895	90	132.092	0.600	140	159.689	0.518
5.5	46.952	1.498	41	97.267	0.883	91	132.692	0.597	141	160.207	0.518
6.0	48.450	1.418	42	98.150	0.871	92	133.289	0.594	142	160.725	0.516
6.5	49.868	1.348	43	99.021	0.860	93	133.883	0.592	143	161.241	0.516
7.0	51.216	1.287	44	99.881	0.850	94	134.475	0.589	144	161.757	0.515
7.5	52.503	1.232	45	100.731	0.839	95	135.064	0.587	145	162.272	0.514
8.0	53.735	1.183	46	101.570	0.830	96	135.651	0.584	146	162.786	0.514
8.5	54.918	1.139	47	102.400	0.820	97	136.235	0.582	147	163.300	0.513
9.0	56.057	1.098	48	103.220	0.811	98	136.817	0.580	148	163.813	0.512
9.5	57.155	1.062	49	104.031	0.802	99	137.397	0.577	149	164.325	0.512
10.0	58.217	1.029	50	104.833	0.794	100	137.974	0.575	150	164.837	0.511
10.5	59.246	0.997	51	105.627	0.785	101	138.549	0.573	151	165.348	0.510
11.0	60.243	0.969	52	106.412	0.777	102	139.122	0.571	152	165.858	0.510
11.5	61.212	0.943	53	107.189	0.770	103	139.693	0.569	153	166.368	0.510
12.0	62.155	0.918	54	107.959	0.762	104	140.262	0.567	154	166.878	0.509
12.5	63.073	0.895	55	108.721	0.755	105	140.829	0.564	155	167.387	0.508
13.0	63.968	0.874	56	109.476	0.749	106	141.393	0.563	156	167.895	0.508
13.5	64.842	0.854	57	110.225	0.742	107	141.956	0.561	157	168.403	0.507
14.0	65.696	0.835	58	110.967	0.735	108	142.517	0.559	158	168.910	0.507
14.5	66.531	0.817	59	111.702	0.729	109	143.076	0.558	159	169.417	0.507
15.0	67.348	0.799	60	112.431	0.723	110	143.634	0.555	160	169.924	0.506
15.5	68.147	0.784	61	113.154	0.717	111	144.189	0.554	161	170.430	0.506
16.0	68.931	0.769	62	113.871	0.711	112	144.743	0.552	162	170.936	0.505
16.5	69.700	0.754	63	114.582	0.705	113	145.295	0.551	163	171.441	0.505
17.0	70.454	0.741	64	115.287	0.700	114	145.846	0.549	164	171.946	0.505
17.5	71.195	0.728	65	115.987	0.695	115	146.395	0.547	165	172.451	0.505
18.0	71.923	0.716	66	116.682	0.690	116	146.942	0.546	166	172.956	0.504
18.5	72.639	0.704	67	117.372	0.685	117	147.488	0.544	167	173.460	0.504
19.0	73.343	0.692	68	118.057	0.680	118	148.032	0.543	168	173.964	0.504
19.5	74.035	0.682	69	118.737	0.675	119	148.575	0.541	169	174.468	0.504
20	74.717	1.333	70	119.412	0.671	120	149.116	0.540	170	174.972	0.503
21	76.050	1.295	71	120.083	0.666	121	149.656	0.539	171	175.475	0.503
22	77.345	1.260	72	120.749	0.661	122	150.195	0.537	172	175.978	0.503
23	78.605	1.227	73	121.410	0.658	123	150.732	0.536	173	176.481	0.503
24	79.832	1.197	74	122.068	0.654	124	151.268	0.535	174	176.984	0.503
25	81.029	1.169	75	122.722	0.650	125	151.803	0.533	175	177.487	0.503
26	82.198	1.142	76	123.372	0.645	126	152.336	0.532	176	177.990	0.503
27	83.340	1.118	77	124.017	0.641	127	152.868	0.531	177	178.493	0.503
28	84.458	1.094	78	124.658	0.638	128	153.399	0.530	178	178.996	0.502
29	85.552	1.072	79	125.296	0.634	129	153.929	0.529	179	179.498	0.502
30	86.624		80	125.930		130	154.458		180	180.000	
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ

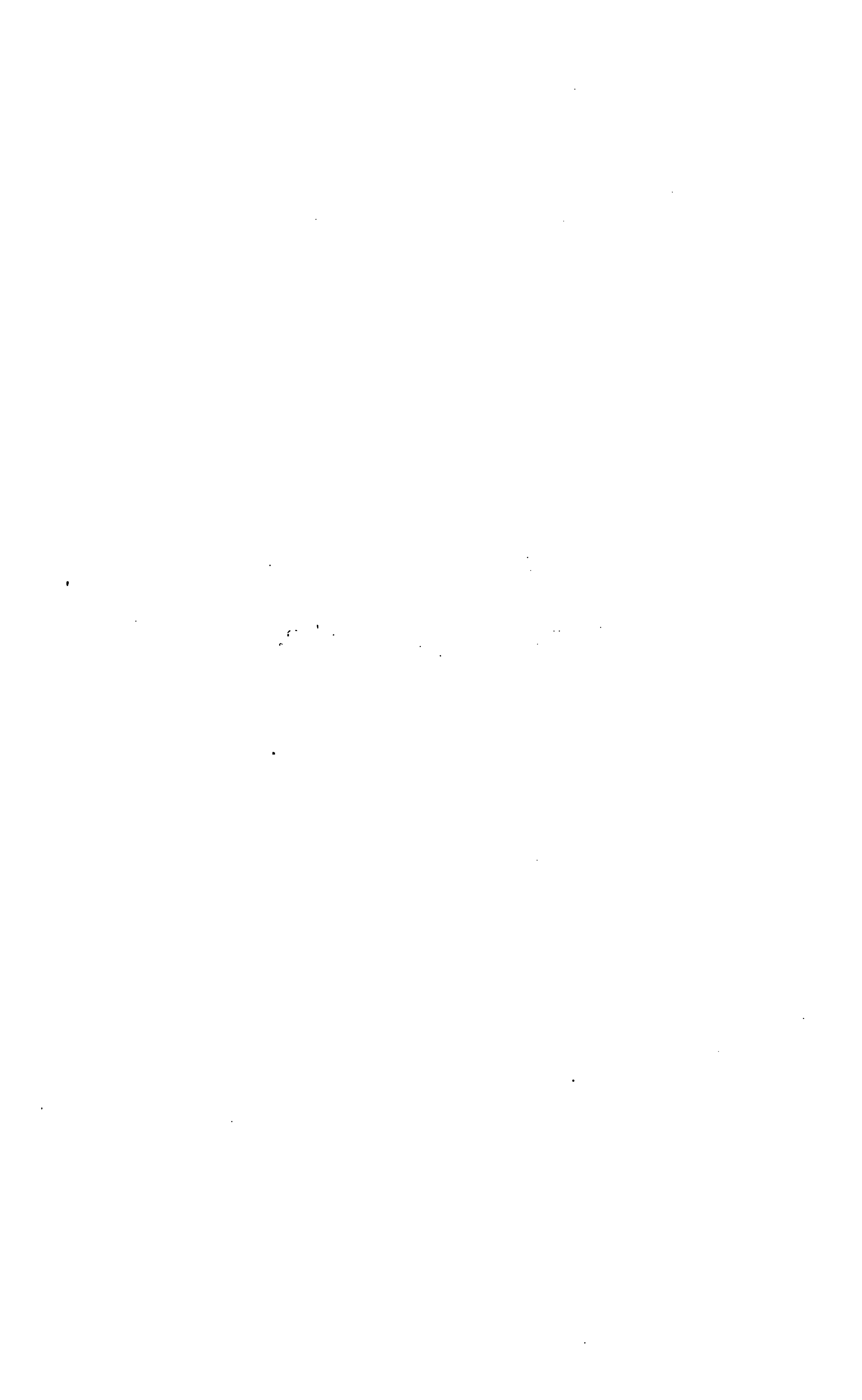
$$E = M + e \sin E.$$

$e = 1.00$

M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ
°	°	°	°	°	°	°	°	°	°	°	°
0.0	0.000	21.485	30	87.229	1.041	80	126.222	0.627	130	154.587	0.525
0.5	21.485	5.622	31	88.270	1.021	81	126.849	0.624	131	155.112	0.524
1.0	27.107	3.959	32	89.291	1.004	82	127.473	0.620	132	155.636	0.523
1.5	31.066	3.163	33	90.295	0.987	83	128.093	0.617	133	156.159	0.522
2.0	34.229	2.679	34	91.282	0.970	84	128.710	0.613	134	156.681	0.521
2.5	36.908	2.348	35	92.252	0.954	85	129.323	0.611	135	157.202	0.519
3.0	39.256	2.105	36	93.206	0.940	86	129.934	0.607	136	157.721	0.519
3.5	41.361	1.919	37	94.146	0.926	87	130.541	0.605	137	158.240	0.518
4.0	43.280	1.769	38	95.072	0.912	88	131.146	0.602	138	158.758	0.517
4.5	45.049	1.646	39	95.984	0.899	89	131.748	0.599	139	159.275	0.516
5.0	46.695	1.543	40	96.883	0.887	90	132.347	0.596	140	159.791	0.516
5.5	48.238	1.455	41	97.770	0.875	91	132.943	0.593	141	160.307	0.515
6.0	49.693	1.380	42	98.645	0.863	92	133.536	0.591	142	160.822	0.514
6.5	51.073	1.314	43	99.508	0.853	93	134.127	0.588	143	161.336	0.513
7.0	52.387	1.255	44	100.361	0.843	94	134.715	0.586	144	161.849	0.512
7.5	53.642	1.203	45	101.204	0.832	95	135.301	0.583	145	162.361	0.512
8.0	54.845	1.156	46	102.036	0.823	96	135.884	0.581	146	162.873	0.511
8.5	56.001	1.114	47	102.859	0.813	97	136.465	0.579	147	163.384	0.510
9.0	57.115	1.075	48	103.672	0.805	98	137.044	0.576	148	163.894	0.510
9.5	58.190	1.040	49	104.477	0.796	99	137.620	0.574	149	164.404	0.509
10.0	59.230	1.008	50	105.273	0.787	100	138.194	0.572	150	164.913	0.509
10.5	60.238	0.979	51	106.060	0.779	101	138.766	0.570	151	165.422	0.508
11.0	61.217	0.951	52	106.839	0.772	102	139.336	0.568	152	165.930	0.507
11.5	62.168	0.925	53	107.611	0.764	103	139.904	0.565	153	166.437	0.507
12.0	63.093	0.902	54	108.375	0.756	104	140.469	0.563	154	166.944	0.506
12.5	63.995	0.879	55	109.131	0.750	105	141.032	0.562	155	167.450	0.506
13.0	64.874	0.859	56	109.881	0.743	106	141.594	0.560	156	167.956	0.505
13.5	65.733	0.840	57	110.624	0.736	107	142.154	0.558	157	168.461	0.505
14.0	66.573	0.821	58	111.360	0.730	108	142.712	0.556	158	168.966	0.504
14.5	67.394	0.803	59	112.090	0.724	109	143.268	0.554	159	169.470	0.504
15.0	68.197	0.788	60	112.814	0.717	110	143.822	0.552	160	169.974	0.504
15.5	68.985	0.772	61	113.531	0.712	111	144.374	0.551	161	170.478	0.503
16.0	69.757	0.757	62	114.243	0.706	112	144.925	0.549	162	170.981	0.503
16.5	70.514	0.743	63	114.949	0.701	113	145.474	0.548	163	171.484	0.503
17.0	71.257	0.730	64	115.650	0.695	114	146.022	0.546	164	171.987	0.502
17.5	71.987	0.718	65	116.345	0.690	115	146.568	0.544	165	172.489	0.502
18.0	72.705	0.706	66	117.035	0.685	116	147.112	0.543	166	172.991	0.502
18.5	73.411	0.694	67	117.720	0.680	117	147.655	0.541	167	173.493	0.502
19.0	74.105	0.683	68	118.400	0.676	118	148.196	0.540	168	173.995	0.501
19.5	74.788	0.673	69	119.076	0.670	119	148.736	0.538	169	174.496	0.501
20	75.461	1.316	70	119.746	0.666	120	149.274	0.537	170	174.997	0.501
21	76.777	1.278	71	120.412	0.662	121	149.811	0.536	171	175.498	0.501
22	78.055	1.244	72	121.074	0.657	122	150.347	0.534	172	175.999	0.500
23	79.299	1.213	73	121.731	0.654	123	150.881	0.533	173	176.499	0.500
24	80.512	1.183	74	122.385	0.649	124	151.414	0.532	174	176.999	0.501
25	81.695	1.155	75	123.034	0.645	125	151.946	0.531	175	177.500	0.500
26	82.850	1.130	76	123.679	0.641	126	152.477	0.529	176	178.000	0.500
27	83.980	1.105	77	124.320	0.638	127	153.006	0.528	177	178.500	0.500
28	85.085	1.083	78	124.958	0.634	128	153.534	0.527	178	179.000	0.500
29	86.168	1.061	79	125.592	0.630	129	154.061	0.526	179	179.500	0.500
30	87.229		80	126.222		130	154.587		180	180.000	
M	E	Δ	M	E	Δ	M	E	Δ	M	E	Δ

Hülfstafel

für grosse Excentricitäten.



Argument $x = l \sin E$.

x	lA	Δ	x	lA	Δ	x	lA	Δ
5.00	9.2218488	0	7.30	9.2218495	1	7.80	9.2218565	4
5.10	9.2218488	0	7.31	9.2218496	0	7.81	9.2218569	4
5.20	9.2218488	0	7.32	9.2218496	0	7.82	9.2218573	4
5.30	9.2218488	0	7.33	9.2218496	1	7.83	9.2218577	4
5.40	9.2218488	0	7.34	9.2218497	0	7.84	9.2218581	4
5.50	9.2218488	0	7.35	9.2218497	1	7.85	9.2218585	5
5.60	9.2218488	0	7.36	9.2218498	0	7.86	9.2218590	5
5.70	9.2218488	0	7.37	9.2218498	1	7.87	9.2218595	5
5.80	9.2218488	0	7.38	9.2218499	0	7.88	9.2218600	5
5.90	9.2218488	0	7.39	9.2218499	1	7.89	9.2218605	6
6.00	9.2218488	0	7.40	9.2218500	0	7.90	9.2218611	6
6.10	9.2218488	0	7.41	9.2218500	1	7.91	9.2218617	6
6.20	9.2218488	0	7.42	9.2218501	1	7.92	9.2218623	6
6.30	9.2218488	0	7.43	9.2218502	0	7.93	9.2218629	7
6.40	9.2218488	0	7.44	9.2218502	1	7.94	9.2218636	7
6.50	9.2218488	0	7.45	9.2218503	1	7.95	9.2218643	7
6.60	9.2218488	0	7.46	9.2218504	1	7.96	9.2218650	8
6.70	9.2218488	0	7.47	9.2218505	0	7.97	9.2218658	8
6.80	9.2218488	1	7.48	9.2218505	1	7.98	9.2218666	8
6.90	9.2218489	0	7.49	9.2218506	1	7.99	9.2218674	9
7.00	9.2218489	1	7.50	9.2218507	1	8.00	9.2218683	9
7.01	9.2218490	0	7.51	9.2218508	1	8.01	9.2218692	10
7.02	9.2218490	0	7.52	9.2218509	1	8.02	9.2218702	10
7.03	9.2218490	0	7.53	9.2218510	1	8.03	9.2218712	10
7.04	9.2218490	0	7.54	9.2218511	1	8.04	9.2218722	11
7.05	9.2218490	0	7.55	9.2218512	1	8.05	9.2218733	12
7.06	9.2218490	0	7.56	9.2218513	1	8.06	9.2218745	12
7.07	9.2218490	0	7.57	9.2218514	2	8.07	9.2218757	13
7.08	9.2218490	0	7.58	9.2218516	1	8.08	9.2218770	13
7.09	9.2218490	1	7.59	9.2218517	2	8.09	9.2218783	14
7.10	9.2218491	0	7.60	9.2218519	1	8.10	9.2218797	15
7.11	9.2218491	0	7.61	9.2218520	1	8.11	9.2218812	15
7.12	9.2218491	0	7.62	9.2218521	2	8.12	9.2218827	16
7.13	9.2218491	0	7.63	9.2218523	2	8.13	9.2218843	17
7.14	9.2218491	0	7.64	9.2218525	1	8.14	9.2218860	17
7.15	9.2218491	1	7.65	9.2218526	2	8.15	9.2218877	19
7.16	9.2218492	0	7.66	9.2218528	2	8.16	9.2218896	19
7.17	9.2218492	0	7.67	9.2218530	2	8.17	9.2218915	20
7.18	9.2218492	0	7.68	9.2218532	2	8.18	9.2218935	21
7.19	9.2218492	0	7.69	9.2218534	2	8.19	9.2218956	22
7.20	9.2218492	1	7.70	9.2218536	3	8.20	9.2218978	24
7.21	9.2218493	0	7.71	9.2218539	2	8.21	9.2219002	24
7.22	9.2218493	0	7.72	9.2218541	3	8.22	9.2219026	25
7.23	9.2218493	0	7.73	9.2218544	3	8.23	9.2219051	27
7.24	9.2218493	1	7.74	9.2218547	2	8.24	9.2219078	27
7.25	9.2218494	0	7.75	9.2218549	3	8.25	9.2219105	30
7.26	9.2218494	0	7.76	9.2218552	3	8.26	9.2219135	30
7.27	9.2218494	1	7.77	9.2218555	3	8.27	9.2219165	32
7.28	9.2218495	0	7.78	9.2218558	4	8.28	9.2219197	34
7.29	9.2218495	0	7.79	9.2218562	3	8.29	9.2219231	35
7.30	9.2218495		7.80	9.2218565		8.30	9.2219266	
x	lA	Δ	x	lA	Δ	x	lA	Δ

Argument $x = l \sin E$.

x	lA	Δ	x	lA	Δ	x	lA	Δ
8.30	9.2219266	36	8.800	9.2226279	36	8.850	9.2228301	45
8.31	9.2219302	39	8.801	9.2226315	37	8.851	9.2228346	46
8.32	9.2219341	40	8.802	9.2226352	36	8.852	9.2228392	45
8.33	9.2219381	42	8.803	9.2226388	36	8.853	9.2228437	46
8.34	9.2219423	44	8.804	9.2226424	37	8.854	9.2228483	47
8.35	9.2219467	46	8.805	9.2226461	37	8.855	9.2228530	46
8.36	9.2219513	49	8.806	9.2226498	37	8.856	9.2228576	47
8.37	9.2219562	50	8.807	9.2226535	37	8.857	9.2228623	46
8.38	9.2219612	53	8.808	9.2226572	38	8.858	9.2228669	48
8.39	9.2219665	56	8.809	9.2226610	37	8.859	9.2228717	47
8.40	9.2219721	58	8.810	9.2226647	38	8.860	9.2228764	47
8.41	9.2219779	61	8.811	9.2226685	38	8.861	9.2228811	48
8.42	9.2219840	63	8.812	9.2226723	38	8.862	9.2228859	48
8.43	9.2219903	67	8.813	9.2226761	38	8.863	9.2228907	48
8.44	9.2219970	70	8.814	9.2226799	38	8.864	9.2228955	49
8.45	9.2220040	73	8.815	9.2226837	39	8.865	9.2229004	48
8.46	9.2220113	77	8.816	9.2226876	39	8.866	9.2229052	49
8.47	9.2220190	80	8.817	9.2226915	39	8.867	9.2229101	49
8.48	9.2220270	84	8.818	9.2226954	39	8.868	9.2229150	50
8.49	9.2220354	88	8.819	9.2226993	39	8.869	9.2229200	49
8.50	9.2220442	93	8.820	9.2227032	40	8.870	9.2229249	50
8.51	9.2220535	96	8.821	9.2227072	39	8.871	9.2229299	50
8.52	9.2220631	101	8.822	9.2227111	40	8.872	9.2229349	50
8.53	9.2220732	106	8.823	9.2227151	40	8.873	9.2229399	51
8.54	9.2220838	110	8.824	9.2227191	41	8.874	9.2229450	51
8.55	9.2220948	117	8.825	9.2227232	40	8.875	9.2229501	51
8.56	9.2221065	121	8.826	9.2227272	41	8.876	9.2229552	51
8.57	9.2221186	127	8.827	9.2227313	40	8.877	9.2229603	51
8.58	9.2221313	134	8.828	9.2227353	41	8.878	9.2229654	52
8.59	9.2221447	140	8.829	9.2227394	42	8.879	9.2229706	52
8.60	9.2221587	146	8.830	9.2227436	41	8.880	9.2229758	52
8.61	9.2221733	152	8.831	9.2227477	42	8.881	9.2229810	52
8.62	9.2221885	161	8.832	9.2227519	41	8.882	9.2229862	53
8.63	9.2222046	167	8.833	9.2227560	42	8.883	9.2229915	53
8.64	9.2222213	176	8.834	9.2227602	42	8.884	9.2229968	53
8.65	9.2222389	184	8.835	9.2227644	43	8.885	9.2230021	53
8.66	9.2222573	193	8.836	9.2227687	42	8.886	9.2230074	53
8.67	9.2222766	202	8.837	9.2227729	43	8.887	9.2230127	54
8.68	9.2222968	211	8.838	9.2227772	43	8.888	9.2230181	54
8.69	9.2223179	222	8.839	9.2227815	43	8.889	9.2230235	55
8.70	9.2223401	232	8.840	9.2227858	43	8.890	9.2230290	54
8.71	9.2223633	242	8.841	9.2227901	44	8.891	9.2230344	55
8.72	9.2223875	254	8.842	9.2227945	44	8.892	9.2230399	55
8.73	9.2224129	266	8.843	9.2227989	44	8.893	9.2230454	56
8.74	9.2224395	279	8.844	9.2228033	44	8.894	9.2230510	55
8.75	9.2224674	292	8.845	9.2228077	44	8.895	9.2230565	56
8.76	9.2224966	305	8.846	9.2228121	45	8.896	9.2230621	56
8.77	9.2225271	321	8.847	9.2228166	45	8.897	9.2230677	57
8.78	9.2225592	336	8.848	9.2228211	45	8.898	9.2230734	56
8.79	9.2225928	351	8.849	9.2228256	45	8.899	9.2230790	57
8.80	9.2226279		8.850	9.2228301		8.900	9.2230847	
x	lA	Δ	x	lA	Δ	x	lA	Δ

Argument $x = l \sin E$.

x	lA	Δ	x	lA	Δ	x	lA	Δ
8.900	9.2230847	58	8.950	9.2234057	72	9.000	9.2238104	90
8.901	9.2230905	57	8.951	9.2234129	73	9.001	9.2238194	92
8.902	9.2230962	58	8.952	9.2234202	72	9.002	9.2238286	91
8.903	9.2231020	58	8.953	9.2234274	73	9.003	9.2238377	93
8.904	9.2231078	58	8.954	9.2234347	74	9.004	9.2238470	92
8.905	9.2231136	58	8.955	9.2234421	74	9.005	9.2238562	93
8.906	9.2231194	59	8.956	9.2234495	74	9.006	9.2238655	94
8.907	9.2231253	59	8.957	9.2234569	74	9.007	9.2238749	93
8.908	9.2231312	60	8.958	9.2234643	75	9.008	9.2238842	95
8.909	9.2231372	59	8.959	9.2234718	75	9.009	9.2238937	95
8.910	9.2231431	60	8.960	9.2234793	76	9.010	9.2239032	95
8.911	9.2231491	60	8.961	9.2234869	76	9.011	9.2239127	95
8.912	9.2231551	61	8.962	9.2234945	76	9.012	9.2239222	97
8.913	9.2231612	61	8.963	9.2235021	76	9.013	9.2239319	96
8.914	9.2231673	61	8.964	9.2235097	77	9.014	9.2239415	97
8.915	9.2231734	61	8.965	9.2235174	77	9.015	9.2239512	98
8.916	9.2231795	61	8.966	9.2235251	78	9.016	9.2239610	97
8.917	9.2231856	62	8.967	9.2235329	78	9.017	9.2239707	99
8.918	9.2231918	62	8.968	9.2235407	78	9.018	9.2239806	98
8.919	9.2231980	63	8.969	9.2235485	79	9.019	9.2239904	100
8.920	9.2232043	63	8.970	9.2235564	79	9.020	9.2240004	99
8.921	9.2232106	63	8.971	9.2235643	80	9.021	9.2240103	101
8.922	9.2232169	63	8.972	9.2235723	80	9.022	9.2240204	100
8.923	9.2232232	64	8.973	9.2235803	80	9.023	9.2240304	101
8.924	9.2232296	63	8.974	9.2235883	80	9.024	9.2240405	102
8.925	9.2232359	65	8.975	9.2235963	81	9.025	9.2240507	102
8.926	9.2232424	64	8.976	9.2236044	82	9.026	9.2240609	103
8.927	9.2232488	65	8.977	9.2236126	81	9.027	9.2240712	103
8.928	9.2232553	65	8.978	9.2236207	82	9.028	9.2240815	103
8.929	9.2232618	65	8.979	9.2236289	83	9.029	9.2240928	104
8.930	9.2232683	66	8.980	9.2236372	82	9.030	9.2241022	105
8.931	9.2232749	66	8.981	9.2236454	84	9.031	9.2241127	105
8.932	9.2232815	66	8.982	9.2236538	83	9.032	9.2241232	105
8.933	9.2232881	67	8.983	9.2236621	84	9.033	9.2241337	106
8.934	9.2232948	67	8.984	9.2236705	85	9.034	9.2241443	106
8.935	9.2233015	67	8.985	9.2236790	84	9.035	9.2241549	107
8.936	9.2233082	68	8.986	9.2236874	86	9.036	9.2241656	108
8.937	9.2233150	68	8.987	9.2236960	85	9.037	9.2241764	108
8.938	9.2233218	68	8.988	9.2237045	86	9.038	9.2241872	108
8.939	9.2233286	68	8.989	9.2237131	86	9.039	9.2241980	109
8.940	9.2233354	69	8.990	9.2237217	87	9.040	9.2242089	109
8.941	9.2233423	69	8.991	9.2237304	87	9.041	9.2242198	110
8.942	9.2233492	70	8.992	9.2237391	88	9.042	9.2242308	111
8.943	9.2233562	70	8.993	9.2237479	88	9.043	9.2242419	111
8.944	9.2233632	70	8.994	9.2237567	88	9.044	9.2242530	111
8.945	9.2233702	70	8.995	9.2237655	89	9.045	9.2242641	112
8.946	9.2233772	71	8.996	9.2237744	89	9.046	9.2242753	113
8.947	9.2233843	71	8.997	9.2237833	90	9.047	9.2242866	113
8.948	9.2233914	71	8.998	9.2237923	90	9.048	9.2242979	113
8.949	9.2233985	72	8.999	9.2238013	91	9.049	9.2243092	114
8.950	9.2234057		9.000	9.2238104		9.050	9.2243206	
x	lA	Δ	x	lA	Δ	x	lA	Δ

Argument $x = l \sin E$.

x	lA	Δ	x	lA	Δ	x	lA	Δ
9.050	9.2243206	115	9.100	9.2249645	145	9.150	9.2257773	182
9.051	9.2243321	115	9.101	9.2249790	145	9.151	9.2257955	184
9.052	9.2243436	116	9.102	9.2249935	146	9.152	9.2258139	184
9.053	9.2243552	116	9.103	9.2250081	147	9.153	9.2258323	186
9.054	9.2243668	117	9.104	9.2250228	147	9.154	9.2258509	186
9.055	9.2243785	117	9.105	9.2250375	148	9.155	9.2258695	187
9.056	9.2243902	118	9.106	9.2250523	149	9.156	9.2258882	188
9.057	9.2244020	119	9.107	9.2250672	149	9.157	9.2259070	188
9.058	9.2244139	118	9.108	9.2250821	150	9.158	9.2259258	190
9.059	9.2244257	120	9.109	9.2250971	151	9.159	9.2259448	191
9.060	9.2244377	120	9.110	9.2251122	152	9.160	9.2259639	191
9.061	9.2244497	121	9.111	9.2251274	152	9.161	9.2259830	192
9.062	9.2244618	121	9.112	9.2251426	153	9.162	9.2260022	194
9.063	9.2244739	122	9.113	9.2251579	154	9.163	9.2260216	194
9.064	9.2244861	122	9.114	9.2251733	154	9.164	9.2260410	195
9.065	9.2244983	123	9.115	9.2251887	156	9.165	9.2260605	196
9.066	9.2245106	124	9.116	9.2252043	155	9.166	9.2260801	197
9.067	9.2245230	124	9.117	9.2252198	157	9.167	9.2260998	198
9.068	9.2245354	124	9.118	9.2252355	157	9.168	9.2261196	198
9.069	9.2245478	125	9.119	9.2252512	158	9.169	9.2261394	200
9.070	9.2245603	126	9.120	9.2252670	159	9.170	9.2261594	201
9.071	9.2245729	127	9.121	9.2252829	160	9.171	9.2261795	201
9.072	9.2245856	127	9.122	9.2252989	160	9.172	9.2261996	203
9.073	9.2245983	127	9.123	9.2253149	161	9.173	9.2262199	203
9.074	9.2246110	129	9.124	9.2253310	162	9.174	9.2262402	205
9.075	9.2246239	128	9.125	9.2253472	163	9.175	9.2262607	205
9.076	9.2246367	130	9.126	9.2253635	163	9.176	9.2262812	206
9.077	9.2246497	130	9.127	9.2253798	164	9.177	9.2263018	208
9.078	9.2246627	130	9.128	9.2253962	165	9.178	9.2263226	208
9.079	9.2246757	131	9.129	9.2254127	165	9.179	9.2263434	209
9.080	9.2246888	132	9.130	9.2254292	167	9.180	9.2263643	210
9.081	9.2247020	133	9.131	9.2254459	167	9.181	9.2263853	212
9.082	9.2247153	133	9.132	9.2254626	168	9.182	9.2264065	212
9.083	9.2247286	133	9.133	9.2254794	169	9.183	9.2264277	213
9.084	9.2247419	135	9.134	9.2254963	169	9.184	9.2264490	214
9.085	9.2247554	135	9.135	9.2255132	171	9.185	9.2264704	215
9.086	9.2247689	135	9.136	9.2255303	171	9.186	9.2264919	217
9.087	9.2247824	136	9.137	9.2255474	172	9.187	9.2265136	217
9.088	9.2247960	137	9.138	9.2255646	172	9.188	9.2265353	218
9.089	9.2248097	138	9.139	9.2255818	174	9.189	9.2265571	219
9.090	9.2248235	138	9.140	9.2255992	174	9.190	9.2265790	221
9.091	9.2248373	138	9.141	9.2256166	175	9.191	9.2266011	221
9.092	9.2248511	140	9.142	9.2256341	176	9.192	9.2266232	223
9.093	9.2248651	140	9.143	9.2256517	177	9.193	9.2266455	223
9.094	9.2248791	140	9.144	9.2256694	178	9.194	9.2266678	224
9.095	9.2248931	142	9.145	9.2256872	178	9.195	9.2266902	226
9.096	9.2249073	142	9.146	9.2257050	180	9.196	9.2267128	227
9.097	9.2249215	142	9.147	9.2257230	180	9.197	9.2267355	227
9.098	9.2249357	144	9.148	9.2257410	181	9.198	9.2267582	229
9.099	9.2249501	144	9.149	9.2257591	182	9.199	9.2267811	230
9.100	9.2249645		9.150	9.2257773		9.200	9.2268041	
x	lA	Δ	x	lA	Δ	x	lA	Δ

x	lA	Δ	x	lA	Δ	x	lA	Δ
9.200	9.2268041	231	9.250	9.2281025	292	9.300	9.2297463	370
9.201	9.2268272	232	9.251	9.2281317	294	9.301	9.2297833	372
9.202	9.2268504	233	9.252	9.2281611	295	9.302	9.2298205	374
9.203	9.2268737	234	9.253	9.2281906	296	9.303	9.2298579	375
9.204	9.2268971	235	9.254	9.2282202	298	9.304	9.2298954	377
9.205	9.2269206	237	9.255	9.2282500	299	9.305	9.2299331	379
9.206	9.2269443	237	9.256	9.2282799	300	9.306	9.2299710	381
9.207	9.2269680	239	9.257	9.2283099	302	9.307	9.2300091	383
9.208	9.2269919	240	9.258	9.2283401	304	9.308	9.2300474	384
9.209	9.2270159	240	9.259	9.2283705	305	9.309	9.2300858	387
9.210	9.2270399	242	9.260	9.2284010	306	9.310	9.2301245	388
9.211	9.2270641	244	9.261	9.2284316	307	9.311	9.2301633	390
9.212	9.2270885	244	9.262	9.2284623	309	9.312	9.2302023	391
9.213	9.2271129	245	9.263	9.2284932	311	9.313	9.2302414	394
9.214	9.2271374	247	9.264	9.2285243	312	9.314	9.2302808	396
9.215	9.2271621	248	9.265	9.2285555	314	9.315	9.2303204	397
9.216	9.2271869	249	9.266	9.2285869	315	9.316	9.2303601	399
9.217	9.2272118	250	9.267	9.2286184	317	9.317	9.2304000	402
9.218	9.2272368	251	9.268	9.2286501	318	9.318	9.2304402	403
9.219	9.2272619	252	9.269	9.2286819	319	9.319	9.2304805	405
9.220	9.2272871	254	9.270	9.2287138	321	9.320	9.2305210	407
9.221	9.2273125	255	9.271	9.2287459	323	9.321	9.2305617	409
9.222	9.2273380	256	9.272	9.2287782	324	9.322	9.2306026	411
9.223	9.2273636	257	9.273	9.2288106	326	9.323	9.2306437	413
9.224	9.2273893	259	9.274	9.2288432	327	9.324	9.2306850	414
9.225	9.2274152	259	9.275	9.2288759	329	9.325	9.2307264	417
9.226	9.2274411	261	9.276	9.2289088	330	9.326	9.2307681	419
9.227	9.2274672	262	9.277	9.2289418	332	9.327	9.2308100	421
9.228	9.2274934	264	9.278	9.2289750	333	9.328	9.2308521	423
9.229	9.2275198	264	9.279	9.2290083	335	9.329	9.2308944	425
9.230	9.2275462	266	9.280	9.2290418	337	9.330	9.2309369	426
9.231	9.2275728	267	9.281	9.2290755	338	9.331	9.2309795	429
9.232	9.2275995	269	9.282	9.2291093	340	9.332	9.2310224	431
9.233	9.2276264	269	9.283	9.2291433	341	9.333	9.2310655	434
9.234	9.2276533	271	9.284	9.2291774	343	9.334	9.2311089	435
9.235	9.2276804	273	9.285	9.2292117	345	9.335	9.2311524	437
9.236	9.2277077	273	9.286	9.2292462	346	9.336	9.2311961	440
9.237	9.2277350	275	9.287	9.2292808	348	9.337	9.2312401	441
9.238	9.2277625	276	9.288	9.2293156	350	9.338	9.2312842	443
9.239	9.2277901	277	9.289	9.2293506	351	9.339	9.2313285	445
9.240	9.2278178	279	9.290	9.2293857	353	9.340	9.2313730	448
9.241	9.2278457	280	9.291	9.2294210	355	9.341	9.2314178	450
9.242	9.2278737	281	9.292	9.2294565	356	9.342	9.2314628	452
9.243	9.2279018	283	9.293	9.2294921	358	9.343	9.2315080	454
9.244	9.2279301	284	9.294	9.2295279	360	9.344	9.2315534	456
9.245	9.2279585	285	9.295	9.2295639	361	9.345	9.2315990	459
9.246	9.2279870	287	9.296	9.2296000	363	9.346	9.2316449	461
9.247	9.2280157	288	9.297	9.2296363	365	9.347	9.2316910	463
9.248	9.2280445	289	9.298	9.2296728	367	9.348	9.2317373	465
9.249	9.2280734	291	9.299	9.2297095	368	9.349	9.2317838	467
9.250	9.2281025		9.300	9.2297463		9.350	9.2318305	
x	lA	Δ	x	lA	Δ	x	lA	Δ

Argument $x = l \sin E$.

x	lA	Δ	x	lA	Δ	x	lA	Δ
9.350	9.2318305	470	9.400	9.2344782	598	9.450	9.2378502	762
9.351	9.2318775	472	9.401	9.2345380	600	9.451	9.2379264	765
9.352	9.2319247	474	9.402	9.2345980	603	9.452	9.2380029	770
9.353	9.2319721	477	9.403	9.2346583	606	9.453	9.2380799	773
9.354	9.2320198	478	9.404	9.2347189	609	9.454	9.2381572	777
9.355	9.2320676	481	9.405	9.2347798	612	9.455	9.2382349	780
9.356	9.2321157	484	9.406	9.2348410	615	9.456	9.2383129	785
9.357	9.2321641	485	9.407	9.2349025	618	9.457	9.2383914	788
9.358	9.2322126	488	9.408	9.2349643	621	9.458	9.2384702	792
9.359	9.2322614	491	9.409	9.2350264	624	9.459	9.2385494	797
9.360	9.2323105	492	9.410	9.2350888	627	9.460	9.2386291	800
9.361	9.2323597	495	9.411	9.2351515	630	9.461	9.2387091	804
9.362	9.2324092	498	9.412	9.2352445	633	9.462	9.2387895	808
9.363	9.2324590	500	9.413	9.2352778	636	9.463	9.2388703	812
9.364	9.2325090	502	9.414	9.2353414	639	9.464	9.2389515	816
9.365	9.2325592	505	9.415	9.2354053	642	9.465	9.2390331	820
9.366	9.2326097	507	9.416	9.2354695	646	9.466	9.2391151	824
9.367	9.2326604	509	9.417	9.2355341	648	9.467	9.2391975	828
9.368	9.2327113	512	9.418	9.2355989	652	9.468	9.2392803	832
9.369	9.2327625	515	9.419	9.2356641	655	9.469	9.2393635	836
9.370	9.2328140	517	9.420	9.2357296	658	9.470	9.2394471	841
9.371	9.2328657	519	9.421	9.2357954	661	9.471	9.2395312	844
9.372	9.2329176	522	9.422	9.2358615	664	9.472	9.2396156	849
9.373	9.2329698	524	9.423	9.2359279	668	9.473	9.2397005	853
9.374	9.2330222	527	9.424	9.2359947	671	9.474	9.2397858	857
9.375	9.2330749	530	9.425	9.2360618	675	9.475	9.2398715	862
9.376	9.2331279	532	9.426	9.2361293	677	9.476	9.2399577	865
9.377	9.2331811	535	9.427	9.2361970	681	9.477	9.2400442	870
9.378	9.2332346	537	9.428	9.2362651	684	9.478	9.2401312	875
9.379	9.2332883	539	9.429	9.2363335	688	9.479	9.2402187	878
9.380	9.2333422	543	9.430	9.2364023	691	9.480	9.2403065	883
9.381	9.2333965	545	9.431	9.2364714	694	9.481	9.2403948	888
9.382	9.2334510	547	9.432	9.2365408	698	9.482	9.2404836	892
9.383	9.2335057	551	9.433	9.2366106	701	9.483	9.2405728	896
9.384	9.2335608	553	9.434	9.2366807	704	9.484	9.2406624	900
9.385	9.2336161	555	9.435	9.2367511	708	9.485	9.2407524	905
9.386	9.2336716	558	9.436	9.2368219	712	9.486	9.2408429	910
9.387	9.2337274	561	9.437	9.2368931	715	9.487	9.2409339	914
9.388	9.2337835	564	9.438	9.2369646	718	9.488	9.2410253	919
9.389	9.2338399	566	9.439	9.2370364	722	9.489	9.2411172	923
9.390	9.2338965	570	9.440	9.2371086	725	9.490	9.2412095	928
9.391	9.2339535	572	9.441	9.2371811	729	9.491	9.2413023	932
9.392	9.2340107	574	9.442	9.2372540	733	9.492	9.2413955	937
9.393	9.2340681	578	9.443	9.2373273	736	9.493	9.2414892	942
9.394	9.2341259	580	9.444	9.2374009	740	9.494	9.2415834	947
9.395	9.2341839	583	9.445	9.2374749	743	9.495	9.2416781	951
9.396	9.2342422	586	9.446	9.2375492	747	9.496	9.2417732	956
9.397	9.2343008	589	9.447	9.2376239	750	9.497	9.2418688	960
9.398	9.2343597	591	9.448	9.2376989	755	9.498	9.2419648	966
9.399	9.2344188	594	9.449	9.2377744	758	9.499	9.2420614	970
9.400	9.2344782		9.450	9.2378502		9.500	9.2421584	
x	lA	Δ	x	lA	Δ	x	lA	Δ

x	lA	Δ	x	lA	Δ	x	lA	Δ
9.500	9.2421584	975	9.550	9.2476861	1254	9.600	9.2548182	1624
9.501	9.2422559	980	9.551	9.2478115	1261	9.601	9.2549806	1632
9.502	9.2423539	985	9.552	9.2479376	1267	9.602	9.2551438	1640
9.503	9.2424524	990	9.553	9.2480643	1273	9.603	9.2553078	1650
9.504	9.2425514	995	9.554	9.2481916	1281	9.604	9.2554728	1658
9.505	9.2426509	999	9.555	9.2483197	1286	9.605	9.2556386	1667
9.506	9.2427508	1005	9.556	9.2484483	1293	9.606	9.2558053	1676
9.507	9.2428513	1010	9.557	9.2485776	1300	9.607	9.2559729	1684
9.508	9.2429523	1015	9.558	9.2487076	1307	9.608	9.2561413	1692
9.509	9.2430538	1020	9.559	9.2488383	1313	9.609	9.2563105	1703
9.510	9.2431558	1025	9.560	9.2489696	1320	9.610	9.2564808	1711
9.511	9.2432583	1030	9.561	9.2491016	1327	9.611	9.2566519	1721
9.512	9.2433613	1035	9.562	9.2492343	1333	9.612	9.2568240	1729
9.513	9.2434648	1041	9.563	9.2493676	1340	9.613	9.2569969	1739
9.514	9.2435689	1046	9.564	9.2495016	1348	9.614	9.2571708	1748
9.515	9.2436735	1051	9.565	9.2496364	1354	9.615	9.2573456	1757
9.516	9.2437786	1056	9.566	9.2497718	1361	9.616	9.2575213	1766
9.517	9.2438842	1061	9.567	9.2499079	1368	9.617	9.2576979	1776
9.518	9.2439903	1067	9.568	9.2500447	1376	9.618	9.2578755	1786
9.519	9.2440970	1073	9.569	9.2501823	1382	9.619	9.2580541	1794
9.520	9.2442043	1078	9.570	9.2503205	1389	9.620	9.2582335	1804
9.521	9.2443121	1083	9.571	9.2504594	1396	9.621	9.2584139	1814
9.522	9.2444204	1088	9.572	9.2505990	1405	9.622	9.2585953	1824
9.523	9.2445292	1094	9.573	9.2507395	1411	9.623	9.2587777	1833
9.524	9.2446386	1100	9.574	9.2508806	1418	9.624	9.2589610	1843
9.525	9.2447486	1105	9.575	9.2510224	1426	9.625	9.2591453	1853
9.526	9.2448591	1111	9.576	9.2511650	1433	9.626	9.2593306	1862
9.527	9.2449702	1116	9.577	9.2513083	1441	9.627	9.2595168	1873
9.528	9.2450818	1122	9.578	9.2514524	1448	9.628	9.2597041	1883
9.529	9.2451940	1128	9.579	9.2515972	1455	9.629	9.2598924	1894
9.530	9.2453068	1133	9.580	9.2517427	1463	0.630	9.2600818	1903
9.531	9.2454201	1139	9.581	9.2518890	1471	9.631	9.2602721	1913
9.532	9.2455340	1145	9.582	9.2520361	1478	9.632	9.2604634	1924
9.533	9.2456485	1151	9.583	9.2521839	1486	9.633	9.2606558	1934
9.534	9.2457636	1156	9.584	9.2523325	1493	9.634	9.2608492	1944
9.535	9.2458792	1162	9.585	9.2524818	1501	9.635	9.2610436	1955
9.536	9.2459954	1169	9.586	9.2526319	1509	9.636	9.2612391	1965
9.537	9.2461123	1174	9.587	9.2527828	1518	9.637	9.2614356	1976
9.538	9.2462297	1180	9.588	9.2529346	1525	9.638	9.2616332	1987
9.539	9.2463477	1186	9.589	9.2530871	1533	9.639	9.2618319	1997
9.540	9.2464663	1192	9.590	9.2532404	1541	9.640	9.2620316	2009
9.541	9.2465855	1198	9.591	9.2533945	1549	9.641	9.2622325	2019
9.542	9.2467053	1205	9.592	9.2535494	1557	9.642	9.2624344	2030
9.543	9.2468258	1210	9.593	9.2537051	1566	9.643	9.2626374	2041
9.544	9.2469468	1217	9.594	9.2538617	1573	9.644	9.2628415	2052
9.545	9.2470685	1222	9.595	9.2540190	1582	9.645	9.2630467	2063
9.546	9.2471907	1229	9.596	9.2541772	1590	9.646	9.2632530	2075
9.547	9.2473136	1236	9.597	9.2543362	1598	9.647	9.2634605	2085
9.548	9.2474372	1241	9.598	9.2544960	1607	9.648	9.2636690	2097
9.549	9.2475613	1248	9.599	9.2546567	1615	9.649	9.2638787	2109
9.550	9.2476861		9.600	9.2548182		9.650	9.2640896	
x	lA	Δ	x	lA	Δ	x	lA	Δ

Argument $x = l \sin E$.

x	lA	Δ	x	lA	Δ	x	lA	Δ
9.650	9.2640896	2120	9.700	9.2762664	2801	9.750	9.2924917	3766
9.651	9.2643016	2132	9.701	9.2765465	2817	9.751	9.2928683	3790
9.652	9.2645148	2143	9.702	9.2768282	2834	9.752	9.2932473	3813
9.653	9.2647291	2155	9.703	9.2771116	2850	9.753	9.2936286	3836
9.654	9.2649446	2167	9.704	9.2773966	2867	9.754	9.2940122	3861
9.655	9.2651613	2178	9.705	9.2776833	2883	9.755	9.2943983	3884
9.656	9.2653791	2191	9.706	9.2779716	2900	9.756	9.2947867	3909
9.657	9.2655982	2203	9.707	9.2782616	2917	9.757	9.2951776	3932
9.658	9.2658185	2214	9.708	9.2785533	2934	9.758	9.2955708	3958
9.659	9.2660399	2227	9.709	9.2788467	2951	9.759	9.2959666	3982
9.660	9.2662626	2239	9.710	9.2791418	2968	9.760	9.2963648	4007
9.661	9.2664865	2252	9.711	9.2794386	2985	9.761	9.2967655	4032
9.662	9.2667117	2264	9.712	9.2797371	3002	9.762	9.2971687	4057
9.663	9.2669381	2276	9.713	9.2800373	3020	9.763	9.2975744	4083
9.664	9.2671657	2289	9.714	9.2803393	3038	9.764	9.2979827	4109
9.665	9.2673946	2302	9.715	9.2806431	3055	9.765	9.2983936	4134
9.666	9.2676248	2314	9.716	9.2809486	3073	9.766	9.2988070	4161
9.667	9.2678562	2327	9.717	9.2812559	3092	9.767	9.2992231	4187
9.668	9.2680889	2341	9.718	9.2815651	3109	9.768	9.2996418	4214
9.669	9.2683230	2353	9.719	9.2818760	3128	9.769	9.3000632	4240
9.670	9.2685583	2366	9.720	9.2821888	3146	9.770	9.3004872	4268
9.671	9.2687949	2379	9.721	9.2825034	3164	9.771	9.3009140	4295
9.672	9.2690328	2393	9.722	9.2828198	3183	9.772	9.3013435	4322
9.673	9.2692721	2406	9.723	9.2831381	3202	9.773	9.3017757	4350
9.674	9.2695127	2419	9.724	9.2834583	3221	9.774	9.3022107	4378
9.675	9.2697546	2433	9.725	9.2837804	3241	9.775	9.3026485	4406
9.676	9.2699979	2446	9.726	9.2841045	3259	9.776	9.3030891	4434
9.677	9.2702425	2460	9.727	9.2844304	3279	9.777	9.3035325	4463
9.678	9.2704885	2474	9.728	9.2847583	3298	9.778	9.3039788	4492
9.679	9.2707359	2488	9.729	9.2850881	3317	9.779	9.3044280	4521
9.680	9.2709847	2502	9.730	9.2854198	3338	9.780	9.3048801	4551
9.681	9.2712349	2515	9.731	9.2857536	3358	9.781	9.3053352	4580
9.682	9.2714864	2530	9.732	9.2860894	3377	9.782	9.3057932	4610
9.683	9.2717394	2544	9.733	9.2864271	3398	9.783	9.3062542	4640
9.684	9.2719938	2558	9.734	9.2867669	3419	9.784	9.3067182	4671
9.685	9.2722496	2573	9.735	9.2871088	3438	9.785	9.3071853	4701
9.686	9.2725069	2588	9.736	9.2874526	3460	9.786	9.3076554	4732
9.687	9.2727657	2602	9.737	9.2877986	3481	9.787	9.3081286	4764
9.688	9.2730259	2617	9.738	9.2881467	3501	9.788	9.3086050	4795
9.689	9.2732876	2632	9.739	9.2884968	3522	9.789	9.3090845	4826
9.690	9.2735508	2647	9.740	9.2888490	3544	9.790	9.3095671	4859
9.691	9.2738155	2662	9.741	9.2892034	3566	9.791	9.3100530	4891
9.692	9.2740817	2676	9.742	9.2895600	3587	9.792	9.3105421	4923
9.693	9.2743493	2692	9.743	9.2899187	3609	9.793	9.3110344	4957
9.694	9.2746185	2707	9.744	9.2902796	3630	9.794	9.3115301	4990
9.695	9.2748892	2723	9.745	9.2906426	3653	9.795	9.3120291	5023
9.696	9.2751615	2739	9.746	9.2910079	3676	9.796	9.3125314	5057
9.697	9.2754354	2754	9.747	9.2913755	3698	9.797	9.3130371	5091
9.698	9.2757108	2770	9.748	9.2917453	3720	9.798	9.3135462	5125
9.699	9.2759878	2786	9.749	9.2921173	3744	9.799	9.3140587	5161
9.700	9.2762664		9.750	9.2924917		9.800	9.3145748	
x	lA	Δ	x	lA	Δ	x	lA	Δ





